A MULTIPLE-FACTOR ANALYSIS TO IDENTIFY UNDERLYING DIMENSIONS OF MULTIPLE INDICATORS OF QUALITY RATED AS USEFUL IN MAKING PROGRAM QUALITY-EVALUATION DECISIONS BY ADMINISTRATORS IN FLORIDA'S COMMUNITY COLLEGES

BY

THOMAS ALBERT STEUART

A DISSERTATION PRESENTED TO THE GRADUATE COUNCIL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1983

ACKNOWLEDGEMENTS

During the past two years, many persons have assisted and encouraged me while I have been engaged in the research that has culminated in this dissertation. Regretfully, only a few can be mentioned here. I would like to thank Dr. John M. Nickens, my committee chairman, and the many members of the Florida Community/Junior College Inter-Institutional Research Council, who, through a research assistantship, supplied most of my financial support. I would like to express my gratitude to the other members of my committee, Dr. James L. Wattenbarger and Dr. Robert S. Soar, whose patience with me has been unending. I express a great debt to C.B. "Bix" Rathburn, III, who, as a fellow research assistant, provided me with constant feedback and invaluable emotional support. I wish to thank Dr. Wilson Guertin for his consultations regarding the factor analysis procedures used in this study. Teresa Agrillo, who typed and edited this dissertation, deserves more than I can give her. Finally, I wish to acknowledge James D. Cook for his continuing emotional and financial support, without which this dissertation would never have been completed.

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS....ii

LIST OF TABLES....vi

ABSTRACT....ix

CHAPTER

I INTRODUCTION....1

Rationale....3

Theoretical Rationale....3
Operational Rationale....7

The Problem....9

Need for the Study....10

Delimitations and Limitations....11

Definition of Terms....12

Organization of the Research Report....13

II REVIEW OF RELATED LITERATURE....14

Educational Evaluation....14

Toward a Definition of Educational Evaluation....15
Contemporary Models of Educational Evaluation....17
Decision-Oriented Model of Educational Evaluation...20

Quality Assessment in Higher Education....23

Graduate Education....25
Undergraduate Education....31
Quantifiable Approaches to Quality....36

Determining Underlying Dimensions: Factor Analysis....40

TABLE OF CONTENTS (continued)

Page

Applicability of Factor Analysis.....40
Definition of Factor Analysis.....43
Steps in Factor Analysis.....44

III METHODOLOGY.....50

Description of Data Used.....50

Analysis of the Data.....53

Research Question One.....53
Research Question Two.....56

IV RESULTS AND DISCUSSION.....58

Factor Analysis Results.....59

Interpretation of the Factors.....70

Factor Score Comparisons.....82

Program Areas.....82
Administrative Areas.....90

Summary.....97

V SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY.....99

Summary.....99

Conclusions.....102

Recommendations for Further Study.....109

APPENDICES

A CLASSIFICATIONS OF RESPONDENTS USED IN DATA ANALYSIS.....111

B DESCRIPTION OF IRC PROJECT METHODS AND PROCEDURES.....113

C PROGRAM QUALITY INDICATORS PROJECT QUESTIONNAIRE.....123

D POSITION CODES USED IN THE CATEGORIZATION OF RESPONDENTS BY ADMINISTRATIVE AREA AND PROGRAM AREA WITH FREQUENCIES..136

E MEAN RATINGS FOR PROGRAM CHARACTERISTICS FOR N=450 AND N=315.....139

TABLE OF CONTENTS (continued)

		Page
F	CORRELATION COEFFICIENTS FOR INTERCORRELATIONS OF PROGRAM CHARACTERISTICS FOR N=450	143
G	CORRELATION COEFFICIENTS FOR INTERCORRELATIONS OF PROGRAM CHARACTERISTICS FOR N=315	151
H	PRINCIPAL AXES SOLUTION BASED UPON N=450 WITH FINAL COMMUNALITY ESTIMATES AND EIGENVALUES	159
I	PRINCIPAL AXES SOLUTION BASED UPON N=315 WITH FINAL COMMUNALITY ESTIMATES AND EIGENVALUES	165
J	FACTOR STRUCTURES FOR THE THREE ROTATIONS OF THE PRINCIPAL AXES BASED UPON N=315	171
K	FACTOR STRUCTURES FOR THE THREE ROTATIONS OF THE PRINCIPAL AXES BASED UPON N=450	181
L	t STATISTICS FOR MEAN FACTOR SCORE COMPARISONS BETWEEN PROGRAM AREAS BASED ON ASSUMPTION OF EQUAL VARIANCES	191
M	t STATISTICS FOR MEAN FACTOR SCORE COMPARISONS BETWEEN ADMINISTRATIVE AREAS BASED ON ASSUMPTION OF EQUAL VARIANCES	194
REFERENCES		199
BIOGRAPHICAL SKETCH		207

LIST OF TABLES

Table		Page
1	Variance Accounted for by Successive Principal Axes for N=315	60
2	Program Characteristics With Factor Loadings of .50 or Greater in the Three Rotations of the Principal Axes Solution Based Upon N=315	61
3	Variance Accounted for by Successive Principal Axes for N=450	65
4	Program Characteristics With Factor Loadings of .50 or Greater in the Three Rotations of the Principal Axes Solution Based Upon N=450	66
5	Intercorrelations of the Factors for the 10-Factor Rotation of the Principal Axes Solutions for N=315 and N=450	69
6	Coefficients of Congruence Between the Comparable Factors for the 10-Factor Structures for N=315 and N=450	70
7	Program Characteristics With .50 or Greater Loadings on Factor 1	71
8	Program Characteristics With .50 or Greater Loadings on Factor 2	72
9	Program Characteristics With .50 or Greater Loadings on Factor 3	73
10	Program Characteristics With .50 or Greater Loadings on Factor 4	74
11	Program Characteristics With .50 or Greater Loadings on Factor 5	75
12	Program Characteristics With .50 or Greater Loadings on Factor 6	76
13	Program Characteristics With .50 or Greater Loadings on Factor 7	77

LIST OF TABLES (continued)

Table		Page
14	Program Characteristics With .50 or Greater Loadings on Factor 8	78
15	Program Characteristics With .50 or Greater Loadings on Factor 9	79
16	Number of Respondents Per Program Area and Corresponding Percentages of All Respondents (N=450)	83
17	Mean Factor Scores and Standard Deviations for Respondents Grouped by Program Area	84
18	Number of Respondents Per Administrative Area and Corresponding Percentages of All Respondents (N=450)	91
19	Mean Factor Scores and Standard Deviations for Respondents Grouped by Administrative Area	93

LIST OF FIGURES

Figure		Page
1	Sample Format for Program Quality-Evaluation Information Report	106
2	Sample Format for Program Quality-Evaluation Information Profile	108

Abstract of Dissertation Presented
to the Graduate Council of the University of Florida
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

A MULTIPLE-FACTOR ANALYSIS TO IDENTIFY UNDERLYING DIMENSIONS OF MULTIPLE INDICATORS OF QUALITY RATED AS USEFUL IN MAKING PROGRAM QUALITY-EVALUATION DECISIONS BY ADMINISTRATORS IN FLORIDA'S COMMUNITY COLLEGES

BY

Thomas Albert Steuart

April 1983

Chairman: John M. Nickens
Major Department: Educational Administration and Supervision

The purpose of this study was the identification of any underlying dimensions within multiple quality indicators rated by administrators in Florida public community/junior colleges as highly useful in making program quality-evaluation decisions. It was theorized that utilization of such dimensions to organize and provide information to administrators should result in a format that they would find most useful since it should reflect those aspects of their value systems relevant to the defined decision situations.

Of 631 administrators identified to participate in the study, 450 responded by rating 454 items on a survey questionnaire for degree of usefulness in program quality-evaluation decision making. The correlation matrix of the intercorrelations of the mean responses of the 108 most

highly rated items were factor analyzed using the iterated principal axes method and an orthogonal rotation to the varimax criterion with an oblique rotation to determine intercorrelation of factors. This analysis resulted in the identification of a factor structure accounting for 80.5% of the common variance that contained nine interpretable factors.

The nine dimensions involved information relating to (1) fiscal, physical, and human resources; (2) student ratings of support services; (3) instructional productivity of faculty; (4) assessments of any physical or cognitive needs of students relevant to their performance in their selected programs; (5) ratings of selected aspects of programs by students; (6) indicators of the quantitative output of a program; (7) selected attributes of full-time and part-time faculty; (8) ratings of selected aspects of programs by faculty; and (9) indicators of the responsiveness of a program to certification and accreditation agencies, the local community, the students, and the state.

The recommendation was made that further research in program quality-evaluation involve more direct investigation of the attitudes of the decision maker involved and the development of instruments that will facilitate the identification of attitudinal dimensions relevant to the defined decision situation.

CHAPTER I
INTRODUCTION

During the 1970s when public confidence in higher education waned and financial resources became less abundant, there was an emphasis on accountability. This resulted in a rapid increase of evaluation activities related to higher education. A major focus of these activities was the maintenance or improvement of the quality of programs offered by higher education institutions within the context of a broadening of student access in a time of fiscal constraint (Craven, 1980, p. vii).

The conditions of fiscal austerity and the demands for accountability within the context of broadening student access to higher education have continued into the 1980s (Craven, 1980). There has been an increasing concern for maintaining or improving the quality of programs offered by higher education institutions. The concern is shared by persons within higher education institutions, state level coordinating or governing boards, other state executives, and state legislators (Bowen, 1974; Craven, 1980; "Legislators stress quality improvement," 1980). As Finn (1980) correctly perceived, quality has emerged as the premier concern in higher education for the 1980s.

Although it is the premier concern, quality in higher education is a concept that can mean all things to all people (King, 1981). If used too loosely with little or no definition, the concept provides little guidance. If defined too strictly, the concept is of limited use for a diverse system of higher education (Finn, 1980, p. 2).

Traditionally, the quality of a program or institution in higher education has been determined by subjective evaluations of experts. One criticism of this approach has been that 20 to 30 higher education institutions have been identified consistently as institutions of quality, with all other institutions of higher education virtually ignored (Lawrence & Green, 1980, p. 1). Another criticism has been that the bases of these evaluations have been related to the missions and goals of the institutions identified and institutions with other missions and goals, such as community colleges, have been excluded (Bowen, 1974; Fotheringham, 1978). Usually researchers in higher education have tried to avoid constitutively defining quality, but have operationally defined it through their choices of research designs and evaluative criteria (Astin & Henson, 1977; Blackburn & Lingenfelter, 1973; Cartter, 1966; Krause, 1970).

However quality is defined, the determination of educational quality involves decision making by program administrators, which requires the use of some information about the program being evaluated. This is consonant with the theory of evaluation developed by Stufflebeam, Foley, Gephart, Guba, Hammond, Merriman, and Provus (1971). They defined evaluation as "the process of delineating, obtaining, and providing useful information for judging decision alternatives" (p. 4). Thus, the making of quality evaluations about educational programs may be described as a process of delineating what information about programs is useful to administrators making quality-evaluation decisions, obtaining that information, and providing it in a format useful to those administrators. This definition of program quality evaluation formed the basis of the rationale for this study.

Rationale

Theoretical Rationale

Delineation, the first operational step in program quality-evaluation decision making, involves "the identification of the most useful information" (Stufflebeam et al., 1971, p. 41). Although Stufflebeam et al. did not specify a methodology for accomplishing this step, they did specify that it could be accomplished successfully "by the evaluator only in interaction with his client [the decision maker]" (p. 41). The second step, obtaining, was described as "the more technical aspect of evaluation" (p. 42) and consists of "collecting, organizing, and analyzing [the data delineated as most useful]" (p. 42). The providing phase of evaluation involves reporting the delineated and obtained data to the decision maker "in ways that he finds credible and helpful" (p. 17).

According to Stufflebeam et al. (1971), although there existed much knowledge and many methodologies for collecting data, "the interface role of delineating information needs with the decision makers and the similar interface role of providing information to audiences are not so well developed in theory or practice" (pp. 139-140). Furthermore, they stated that "a most glaring and conspicuous omission in this [their] book is the failure to provide operational guidance for the evaluator as he plays this interface role [of providing information]" (p. 336). It was the theory and methodology of the providing phase of evaluation as defined by Stufflebeam et al. (1971) with which this study was concerned.

Craven (1980) indicated that evaluation processes for the 1980s must be capable of "providing the desired information in an appropriate format" (p. 111). How might an evaluator determine an appropriate format for providing the desired information to decision makers when multiple

items of information have been identified as highly useful in a particular decision situation? A theoretical basis for resolving this problem was suggested, but not developed, by Stufflebeam et al. (1971) in their discussion of the relationship between the items of information identified as most useful in a defined decision situation and the values of the decision maker in interaction with whom the items have been delineated. They stated that it is the value system of the decision maker, especially those aspects of his value system related to a particular decision situation, that determines whether an item of information is relevant to that decision situation (pp. 108-109). The items of information or variables identified as most useful in a defined decision situation are not themselves the criteria used to assess the decision situation, but they are the variables to which the decision maker applies his criteria. On the one hand, the criteria are statements of the means of measuring the variables and, on the other hand, they are "yardsticks for values" (p. 109). Values were defined as "predefined states of certain variables" (p. 108). Presumably, when translated into a means of assessment, "predefined states" equal "criteria" and "certain variables" equal the information identified as most useful in the defined decision situation in interaction with the relevant decision maker.

For the purpose of this study, the important point was that the items of information (variables) identified as most useful in interaction with the relevant decision maker reflect those aspects of his value system that are related to the defined decision situation. If this is true, as theorized by Stufflebeam et al. (1971), it forms a basis for an approach that an evaluator may use in determining how to provide multiple items of information in a format that a decision maker should find "credible and helpful" (p. 17).

The problem is similar to that encountered by psychologists in attempting to describe human personality (Cattell, 1950). With hundreds of terms defining traits by which persons could be described, there was a search for "dimensions of personality" (p. 26) that would facilitate the description of personality (pp. 26-27). Cattell theorized that the multiple descriptors of personality, which he labeled "surface traits" (pp. 21-22), could be accounted for by considerably fewer dimensions, which he labeled "source traits" (p. 27). Additionally, he theorized that the source traits were "the real structural influences underlying personality" (p. 27).

Similarly, it was theorized in this study that for a set of multiple items of information identified in the delineation phase of an evaluation process, based on the theory of evaluation developed by Stufflebeam et al. (1971), there are considerably fewer underlying dimensions that may be identified and used in developing guidelines for providing information in a format that decision makers should find useful in a defined decision situation. If it is true that the items of information identified in the delineation phase reflect those aspects of a decision maker's value system relevant to a defined decision situation, then the underlying dimensions of those items should reflect the dimensions of a decision maker's value system relevant to that decision situation. If the latter is true, then utilizing those underlying dimensions to organize those items should result in providing information in a format that a decision maker should find credible and helpful, since that format should approximate closely the dimensions of those aspects of his value system being used in the decision-making process in the defined decision situation.

This theory may be extended to a decision situation where multiple decision makers are involved. The identified items of information in such a decision situation would reflect a hypothetical value system of "aggregate values" (Stufflebeam et al., 1971, p. 113) of the relevant decision makers. In such a decision situation, the underlying dimensions of the identified items of information should reflect the dimensions of the hypothetical aggregate value system. They should reflect the dimensions of the relevant aspects of an individual decision maker's value system only to the degree that these dimensions are reflected in the aggregate value system. Therefore, it may be expected that utilizing those underlying dimensions to organize the identified items should result in providing information to the decision makers in a format more or less credible and helpful to an individual decision maker to the degree that relevant dimensions of his value system are reflected in the aggregate value system.

Based upon this theory, an appropriate methodology for determining the underlying dimensions of a set of multiple items of information identified as most useful in a defined decision situation would be the same as that used by Cattell (1950) for identifying the underlying dimensions of personality: the multi-variate technique of factor analysis. For a set of variables that individuals can rate or in some manner assess, the technique of multi-factor analysis can be used to determine the dimensions of any underlying pattern of the ratings or other measurements of that set of variables. For example, multiple items of information identified as useful in a defined decision situation may be rated by the relevant decision makers for varying degrees of usefulness. Subsequently, these ratings can be factor analyzed to identify underlying dimensions of

the degree of usefulness of the items. The results of such an analysis should provide the evaluator with some guidelines for organizing the items to increase the probability that the decision makers will find the format of the provided information credible and helpful, i.e., useful in the decision-making process in the defined decision situation. This extension of the theory of evaluation proposed by Stufflebeam et al. (1971) and the suggested methodology should supply evaluators the needed guidance in their role of providing information in a format useful to decision makers in a defined decision situation.

Operational Rationale

This study involved the application of this theory and methodology to an appropriate set of items of information identified as useful in a defined decision situation in order to identify the underlying dimensions of those items and to utilize the identified dimensions to develop guidelines for organizing these items into a format that should be useful to the relevant decision makers in the defined decision situation.

Since the quality of programs has been cited as the premier concern in higher education for the 1980s, the decision situation selected for this study was the making of quality-evaluation decisions about programs in Florida's public community/junior colleges. In Florida, Governor Graham's program for education contained a commitment to assure the citizens of Florida the opportunity to obtain a quality education at every level of public education including higher education. This commitment was reflected in a resolution adopted by the Florida State Board of Education in January, 1981, that included the following statement:

> On a statewide average, educational achievement in the state of Florida will equal that of the upper quartile of states within five years, as indicated by commonly accepted criteria of attainment. (State Board of Education, 1981)

The Division of Community Colleges in Florida is under a mandate from the State Department of Education to identify "certain indicators of quality which can be used system-wide to give evidence of quality improvement" (Division of Community Colleges, 1982, p. 1).

The members of the Florida Community/Junior College Inter-Institutional Research Council (IRC), a research consortium of Florida public community/junior colleges, conducted a project that addressed the problem of identifying indicators of quality useful in program quality-evaluation decision-making in Florida public community/junior colleges (Florida Community/Junior College Inter-Institutional Research Council, 1981). This project was based upon the theory of evaluation developed by Stufflebeam et al. (1971). In interaction with the relevant administrators, the project identified more than 100 indicators of quality as highly useful in making program quality-evaluation decisions. The indicators of quality identified were representative of many of those identified in other studies. A large number of administrators (450 respondents) were involved in this project, representing almost all of the public community/junior colleges in Florida. Although multiple indicators of quality were identified as highly useful, there was no attempt in this project to identify any underlying dimensions of these multiple indicators to utilize in developing guidelines for providing the desired information to the relevant administrators in a useful format.

All of the aspects of the IRC project described previously supported the use of the data from that project to test the theory that for a set of multiple items of information identified in the delineation phase of an evaluation process, there are considerably fewer underlying dimensions that may be identified and used in developing guidelines for providing

information in a format that decision makers should find useful in a defined decision situation. Also, because that project found considerable variability in the information rated as highly useful by respondents classified in various program and administrative areas, there was an opportunity to investigate whether there were any significant differences between these classifications within any identified underlying dimension of the multiple indicators of quality.

The Problem

Based on the theory of evaluation developed by Stufflebeam et al. (1971) and extended in this study, it was expected that multiple items of information identified by the relevant decision makers as useful in a defined decision situation would contain underlying dimensions that could be identified through the use of the technique of factor analysis.

Specifically, this study proposed:

1. To determine any underlying dimensions of the multiple items of information rated as highly useful in program quality-evaluation decision making by administrators involved in such decision making in Florida public community/junior colleges.
2. To determine if there were any significant differences in the degree of emphasis within any identified underlying dimension between the administrators classified within the Advanced and Professional, Occupational, Developmental, Community Instructional Services, and Student Services program areas.
3. To determine if there were any significant differences in the degree of emphasis within any identified underlying dimension between the administrators classified within the administrative areas of General Administration, Academic Affairs, Business

Affairs, Student Affairs, Community Instructional Services, and Presidents.

4. From the results of these analyses, to develop guidelines for organizing the identified multiple indicators of quality into a format that should be useful to the administrators involved in making program quality-evaluation decisions in Florida public community/junior colleges.

Need for the Study

There was a need to develop further that aspect of the theory of evaluation proposed by Stufflebeam et al. (1971) that related to an evaluator's role of providing information (pp. 139-140, 336). In relation to the developed theory, there was a need "to provide operational guidance for the evaluator" (p. 336) in the role of providing information in a format that a decision maker should find "credible and helpful" (p. 17). Craven (1980) stated that to address effectively the higher education issues of the 1980s, there was a need for evaluation processes to provide the desired information in an appropriate format (p. 111). Since only one study relating to quality evaluation in higher education was found that used the technique of factor analysis to determine underlying dimensions (Astin & Solmon, 1981), there appeared to be a need for studies to demonstrate the methodology for determining guidelines for organizing the considerable amount of information desired by administrators for evaluating program quality into formats useful in the decision-making process. Also, due to the large amount of information identified as useful in program quality-evaluation decision making by administrators in Florida public community/junior colleges, there was a need to determine guidelines for organizing that specific information into a format that should be

useful to the administrators involved in the quality-evaluation decision process in Florida public community/junior colleges (Steuart & Rathburn, 1982, p. 185).

Delimitations and Limitations

This study was confined to administrators in Florida public community/junior colleges who were classified by their institutions as executive, administrative, or managerial personnel under part three of the "Personnel and Salary Report (SA-1)" as defined in the Community College Management Information Systems Procedures Manual of the State of Florida (Division of Community Colleges, 1980, pp. 10.1-10.2). Of the 631 administrators identified and surveyed, 450 responded for a response rate of 71.3% (Steuart & Rathburn, 1982, p. 45). Although a response rate of this magnitude is generally considered acceptable, it may still be assumed that the respondents may have been different from the nonrespondents in ways that affected their responses. Thus, the responses might not be representative of the identified population. Since the study was confined to administrators in community colleges, the results are generalizable to administrators in other types of colleges only to the extent that they share attitudes toward program quality evaluation similar to the respondents in this study. The results are not generalizable to administrators in community college systems in other states except to the degree that they share attitudes toward program quality evaluation similar to respondents in this study.

The data used in this study were collected by means of a survey questionnaire. Although face validity was established for the questionnaire through the use of a review panel, reliability of the questionnaire was not established. Therefore, it is not known if similar results would be

obtained from the same respondents if they were surveyed again. The results can be taken only as descriptive of the opinions of the administrators at the time the questionnaire was administered. Also, although the questionnaire was designed to be comprehensive in relation to the descriptive information it contained about programs offered by the community colleges, some information that might be related to quality-evaluation decision making might have been excluded.

The analytic technique of factor analysis used in this study has several limitations associated with it. There are no hard and fast guidelines for determining the number of factors to rotate in attempting to achieve a simple factor pattern. Another researcher might choose different criteria and rotate a different number of factors and would, therefore, obtain different results. Also, factor analysis assumes a linear relationship between the variables involved in the analysis. Any other relationship would be inaccurately represented by a factor-analytic pattern.

Definition of Terms

Administrative Areas. The basic divisions of responsibility for administrators in a comprehensive community college in Florida including General Administration, Academic Affairs, Business Affairs, Student Affairs, Community Instructional Services, and Presidents. Each of these areas is operationally defined in Appendix A.

Dimension. A cluster of program characteristics the ratings of which by the respondents tend to vary in similar ways. Each factor identified from the factor analysis in this study represents a dimension of the underlying interrelationships of the ratings of the program characteristics.

Evaluation. The process of delineating, obtaining, and providing useful information for decision making in a defined decision situation.

Program Areas. The five basic operational areas of a comprehensive community college in Florida including the Advanced and Professional, Occupational, Developmental, Community Instructional Services, and Student Services areas (Division of Community Colleges, 1981, p. 6). Each of these areas is operationally defined in Appendix A.

Program Characteristics. Any information relating to or describing a program offered by a college.

Program Quality-Evaluation Decision Making. The evaluation process, involving the use of relevant information, leading to a judgment by the responsible administrators of the quality of a program.

Underlying Pattern. The interrelationships of the correlations of the ratings by respondents among the program characteristics identified as highly useful in quality-evaluation decision making.

Usefulness. The determination of the serviceability or utility of a program characteristic in making judgments about the quality of a program.

Organization of the Research Report

The chapters in the remainder of this report are organized as follows. Chapter II presents a review of selected literature relevant to this study. Chapter III describes the methodology used in this study. Chapter IV presents the results of this study. Chapter V summarizes and discusses the results with conclusions and recommendations drawn from the results.

CHAPTER II
REVIEW OF RELATED LITERATURE

Since the evaluation of the quality of programs or services offered by higher education institutions occurs within the general framework of educational evaluation, the first section of this chapter is a discussion of concepts of educational evaluation. The decision-oriented approach to educational evaluation is emphasized because it was the theoretical basis of this study. The second section of this chapter reviews selected attempts in higher education to address the issue of quality. The third section of this chapter is a discussion of factor analysis related to discovering underlying dimensions in multi-variate assessments.

Educational Evaluation

During the past decade, evaluation in education has become a topic wide in scope. It has been the failure of many educators to recognize that evaluation is a complex process requiring a broad perspective (Alkin, 1969). Pyatte (1970) emphasized the importance of evaluators in education looking beyond the immediate problems and contemplating the intricate meanings and legitimate functions embodied in evaluation theory.

The dynamics of evaluation compel attention from many perspectives. This section of the literature review is presented in three parts. The initial part introduces the concept of educational evaluation through a discussion of various definitions of educational evaluation. The second part provides a brief review of educational evaluation with emphasis on contemporary models of educational evaluation. The final part discusses

the decision-oriented model of educational evaluation--the basis for this study's approach to the quality issue in higher education.

Toward a Definition of Educational Evaluation

Many definitions of educational evaluation have been proposed stemming from the fact that three different schools of thought regarding educational evaluation have coexisted for more than 30 years (Worthen & Sanders, 1973). Stufflebeam et al. (1971) provided an excellent review of the three basic approaches to educational evaluation from which most of the definitions have developed. The first approach was an early one equating evaluation with measurement (p. 10). The second approach involved the determination of the congruence between performance and objectives, especially behavioral objectives (p. 11). The third approach was the process commonly referred to as professional judgment (p. 13).

From these basic approaches, various definitions of educational evaluation have emerged. These definitions differ in level of abstraction and often reflect the specific concerns of the persons who formulated them. At a basic level, evaluation has been defined as "an assessment of worth" (Popham, 1975, p. 8). Wolf (1979) found this definition needing clarification regarding the meaning of the terms "assessment" and "worth."

A more descriptive definition was offered by Cronbach (1963), who defined evaluation as "the collection and use of information to make decisions about an educational program" (p. 675). This definition was proposed initially during the curriculum development era of the late fifties. Cronbach's studies suggested various kinds of information that could be examined within the evaluation framework and later analyzed and used in decision making designed for course improvement (Wolf, 1979).

Doll (1970) defined educational evaluation as "a broad and continuous effort to inquire into the effects of utilizing educational content and process according to clearly defined goals" (p. 379). In terms of this definition, educational evaluation must transcend the levels of simple measurement techniques or the primary application of the evaluator's values and beliefs. If evaluation is to be a vast and continuous effort, it must depend on "a variety of instruments which are used according to carefully ascribed purposes" (Doll, 1970, p. 380).

Beeby proposed an extended definition of evaluation as "the systematic collection and interpretation of evidence, leading, as a part of the process, to a judgment of value with a view to action (in Wolf, 1979, p. 117). Wolf (1979) developed the important elements of the definition. First, the term systematic implied that the information needed would be defined with precision and obtained in an organized fashion. The second element, the interpretation of evidence, emphasized the role of critical judgment in the evaluation process. Wolf stated that this element was often neglected in evaluation activities. The third element of Beeby's definition involved the judgment of value. This required the evaluator to be responsible for making judgments from his evaluative work about the worth of an educational endeavor. The last element, with a view to action, introduced the notion that an evaluative undertaking should be designed for the sake of future action (pp. 117-124).

Pyatte (1970) emphasized the importance of a rational plan element in the definition of educational evaluation. He stated that "evaluation is the deliberate act of gathering and processing information according to some rational plan the purpose of which is to render, at some point in time, a judgment about the worth of that on which the information is

gathered" (p. 306). According to Pyatte, six elements are included: the agent, the object, the inputs, the plan, the time, and the product.

Bloom, Hastings, and Madaus (1971) defined educational evaluation as:

1. A method of acquiring and processing the evidence needed to improve the student's learning and the teaching;
2. Including a great variety of evidence beyond the usual final paper and pencil examination;
3. An aid in clarifying the significant goals and objectives of education and as a process for determining the extent to which students are developing in these desired ways;
4. A system of quality control in which it may be determined at each step in the teaching-learning process whether the process is effective or not, and if not, what changes must be made to ensure its effectiveness before it is too late;
5. A tool in educational practice for ascertaining whether alternative procedures are equally effective or not in achieving a set of educational ends. (p. 8)

In recent years, the most popular definitions have viewed evaluation as "a process of identifying and collecting information to assist decision makers in choosing among available decision alternatives" (Worthen & Sanders, 1973, p. 20). Since this perspective of evaluation was the one used in this study, an expanded discussion of it is presented in the final part of this section of the literature review.

Contemporary Models of Educational Evaluation

With the increased call for accountability in educational institutions, the body of literature on educational evaluation has expanded rapidly in recent years. Many models of educational evaluation have emerged. There have been numerous attempts to categorize the array of models, the most comprehensive of which were done by Anderson, Ball, and Murphy (1975), Gardner (1977), Stufflebeam et al. (1971), and Worthen and Sanders (1973). The more prominent educational evaluation models included the measurement model, the congruence model, the professional judgment model, the goal-free model, and the decision-oriented model (Gardner, 1977).

The measurement model of evaluation, as described by Gardner (1977), equated evaluation with measurement (p. 575). In this model, evaluation is viewed as the science of instrument development and interpretation (p. 576). The use of measurement instruments results in scores or other indices which are mathematically and statistically manipulated so masses of data can be handled and an individual's or a group's score can be compared with established norms (Stufflebeam et al., pp. 10-11). The model has been widely used and is illustrated by the use of SAT and GRE scores. Gardner (1977) stated that the model was based on the assumptions that the phenomena to be evaluated have significant measurable attributes and that instruments can be designed which are capable of measuring these attributes.

Perhaps no other model has received more attention in recent evaluation literature, especially in its application to the classroom, than the congruence model. The origin of this model is most closely associated with the work of Tyler (1950). Tyler stated that educational objectives were essentially defined in terms of expected changes in human behavior. It followed that evaluation is the process for determining the degree to which changes in behavior actually take place. Gardner (1977) described this model as

> the process of specifying or identifying goals, objectives or standards of performance; identifying or developing tools to measure performance; and comparing the measurement data collected with the previously identified objectives or standards to determine the degree of discrepancy or congruence which exists. (p. 577)

Probably the most widely used but least discussed model of evaluation is the professional judgment model (Stufflebeam et al., 1971, p. 3). In this model, evaluation <u>is</u> professional judgment. Values or criteria that

form the basis of the judgment may or may not be explicitly stated. Often a commonly shared value system is assumed (Gardner, 1977, p. 574). Examples of the uses of this model include the judgments of visiting teams of professionals in the accreditation process, the use of peer review panels for evaluating various programs, and faculty committees passing judgments on promotion or tenure (Worthen & Sanders, 1973, pp. 126-127).

A recent addition to the models of educational evaluation is the goal-free model. Originally proposed by Scriven (1972, 1973), this model is based on the argument that if the main objective of evaluation is to assess the worth of outcomes, then no distinction should be made between intended versus unintended outcomes and that an evaluation should be conducted without reference to a program's goals or objectives (Gardner, 1977, p. 583). In this model, evaluation is not totally goal free, but standards for comparison can be chosen from a wider range of possibilities than those that might be prescribed by a program's objectives (p. 584). The final outcome of the evaluation "should be accurate, descriptive, and interpretative information relative to the most important aspects of the actual performance, effects, and attainments of the program being evaluated" (p. 585).

All of the previously discussed models are similar in that they include reference to the use of some information in making some judgment. The models vary in the degree to which the role of information or the role of judgment is emphasized. In the next model to be discussed, where evaluation is defined as "the process of delineating, obtaining, and providing useful information for judging decision alternatives" (Stufflebeam et al., 1971, p. 4), the emphasis is on the role of information.

Decision-Oriented Model of Educational Evaluation

Stufflebeam and the Phi Delta Kappa National Study Committee have been credited with the refinement of what Gardner (1977) referred to as the decision-oriented model of educational evaluation. According to this model, "evaluators collect information and communicate this information to someone else" (Alkin & Fitz-Gibbon, 1975, p. 1). The process by which this information is collected is systematic and deliberate, an attempt to obtain an unbiased assessment upon which to base an evaluation (Alkin & Fitz-Gibbon, 1975; Guba, 1975; Stufflebeam, 1969).

In this model, the results of evaluation are directed toward those individuals who are "intimately connected with the program being evaluated" (Alkin & Fitz-Gibbon, 1975, p. 1) or the administrative decision makers (Gardner, 1977; Guba, 1975; Stufflebeam, 1969; Stufflebeam et al., 1971). The model was designed to benefit decision makers. In this context, the role of the evaluator is to collect and present summary information to decision makers (Alkin & Fitz-Gibbon, 1975, p. 5). The evaluators collect and present the information needed by someone else who determines its worth. "Decision-facilitation evaluators view the final determination of merit as the decision maker's province, not theirs" (Popham, 1975, p. 25). In contrast, Alkin and Fitz-Gibbon (1975) suggested that the information from a well-designed evaluation would pass judgment, not a person (p. 5).

Stufflebeam (1969) viewed evaluation as the science of providing information for decision making. The assumption was made that the ultimate goal of the decision-making process was educational improvement. Educational improvement implied changes resulting from choices selected by decision makers from various alternatives. The process of decision making

or choosing among options is firmly rooted in the decision maker's and the organization's value systems. In this framework, valid and reliable information is necessary to facilitate the decision maker's judgment of the degree to which various options measure up against a personal or organizational value system (Stufflebeam et al., 1971, p. 38).

Stufflebeam (1968) summarized the rationale for the model in the following statements:

1. The quality of programs depends upon the quality of decisions in and about the program.
2. The quality of decisions depends upon the decision maker's abilities to identify the alternatives which comprise decision situations and to make sound judgments about these alternatives.
3. Making sound judgments requires timely access to valid and reliable information pertaining to the alternatives.
4. The availability of such information requires systematic means to provide it.
5. The processes necessary for providing this information for decision making collectively comprise the concept of evaluation. (p. 6)

Alkin (1969) expressed a similar view of evaluation. He stated that the steps in the process of evaluation included determining the areas of concern for possible decisions, determining the appropriate data, collecting and analyzing the data, and reporting the summary information in a form useful for the decision makers. These steps were condensed and described by Stufflebeam et al. (1971) in their definition of educational evaluation as "the (process) of (delineating), (obtaining), and (providing)(useful)(information) for (judging)(decision alternatives)" (p. 40). Each of the eight elements, set off by parentheses in the definition, has significant implications for the process and techniques of evaluation. These elements of evaluation were defined as follows:

1. Process. A particular and continuing activity subsuming many methods and involving a number of steps and operations.

2. Decision alternatives. Two or more different actions that might be taken in response to some situation requiring altered action.
3. Information. Descriptive or interpretive data about entities (tangible or intangible) and their relationships, in terms of some purpose.
4. Delineating. Identifying evaluative information required through an inventory of the decision alternatives to be weighed and the criteria to be applied in weighing them.
5. Obtaining. Making information available through such processes as collecting, organizing, and analyzing and through such formal means as measurement, data processing, and statistical analysis.
6. Providing. Fitting information together into systems or subsystems that best serve the purposes of the evaluation, and reporting the information to the decision maker.
7. Useful. Satisfying the scientific, practical, and prudential criteria of Chapter I [internal validity, external validity, reliability, objectivity, relevance, importance, scope, credibility, timeliness, pervasiveness, and efficiency] and pertaining to the judgmental criteria to be employed in choosing among the decision alternatives.
8. Judging. The act of choosing among the several decision alternatives; the act of decision making. (Stufflebeam et al., 1971, pp. 40-43)

Stufflebeam et al. (1971) contended that evaluation is an extension of the decision-making process. In this process, the evaluator assists the decision maker by helping to delineate, in interaction with the decision maker, the information which is needed; by providing that information in a useful format to the decision maker; and by assisting the decision maker in the interpretation of the information. This conceptualization of evaluation was used in this study where the making of quality evaluations about educational programs was defined as the process of identifying what information about programs is useful to administrators in making that type of evaluation decision and providing that information to administrators in a format that facilitates the interpretation of the information by administrators making such decisions.

While identifying what information is useful for making quality-evaluations may be difficult, the presentation of the identified information

in a useful format is equally difficult when multiple items of information are involved. This task requires the aggregation of the identified information into profiles or indices or similar formats useful to administrators involved in quality-evaluation decision making. Stufflebeam et al. (1971) pointed out that their theory offered little guidance for the evaluator in deciding how to provide information in a useful format (p. 336). Craven (1975) emphasized the information-providing role of an evaluator in his description of information systems as "any method that provides the right decision maker with the right information in the right form at the right time so as to facilitate the decision-making process" (p. 127). Craven (1975) summarized the importance of an evaluator's information-providing role with the following statement:

> Information that responds to those decision-making needs in a valid, reliable, and timely manner will assist higher educational institutions during this period in making decisions that will maintain and strengthen the quality of its programs and faculty and will enable them to meet the future educational needs of students, society, and scholarship. (p. 138)

Selected studies illustrative of these major approaches to evaluation, including decision-oriented approaches, that have been used in the assessment of quality in higher education are reviewed in the next section of this chapter.

Quality Assessment in Higher Education

An appropriate summary of a basic problem in assessing quality in higher education or any other field is provided by the following statement from Pirsig (1974):

> Quality . . . you know what it is, yet you don't know what it is. But that's self-contradictory. But some things <u>are</u> better than others, that is, they have more quality. But when you try to say what the quality is, apart from the things that have it, it all goes <u>poof</u>! There's nothing to talk about. But if you can't say <u>what</u> Quality is, how do you know what it

> is, or how do you know that it even exists? If no one knows what it is, then for all practical purposes it doesn't exist at all. But for all practical purposes it really does exist. What else are the grades based on? Why else would people pay fortunes for some things and throw others in the trash pile? Obviously some things are better than others . . . but what's the "betterness?" So round and round you go, spinning mental wheels and nowhere finding anyplace to get traction. What the hell is Quality? What is it? (p. 184)

During a recent Southern Regional Educational Board Symposium, SREB President Godwin addressed the problem of defining quality as follows:

> Part of our problem in higher education is that too often we have confused quality with prestige. We need to increase the understanding that quality education is not a monopoly of a few dozen major universities in the nation, but is attainable by all types of higher education institutions. (Legislators stress quality improvements, 1980, p. 3)

The president of Brevard Community College in Florida, in a recent message to his faculty, had the following comments on educational quality:

> Quality in education is not an absolute. It can only be evaluated in terms of arbitrarily determined standards, and these in turn depend partly on subjectively formulated aims and partly on objective statistical procedures. . . . Education is quality education to the extent that it meets the needs of the people being served. (King, 1981, p. 1)

These two quotes are representative of the general view of quality in higher education. That view is vague, subjective, and broad. On one hand, such a view has limited use in that it provides little guidance for educational improvement. On the other hand, it is a workable approach to the quality issue, maintaining maximum flexibility to serve the diversity found in higher education. If by no other means, educators intuitively recognize a substantial variance in program and institutional quality among the diverse institutions that comprise the American system of higher education. Various studies conducted by different researchers for different reasons in different settings using different methodologies have resulted in a variety of quality attributes that provide little assistance in defining quality (Lawrence & Green, 1980).

Selected studies illustrative of the major approaches to quality assessment in higher education are reviewed in this section of the literature review. This section is presented in three parts. First, the major reputational assessments of graduate programs are reviewed. These studies have formed the basis of attempts to investigate the quality issue in higher education. Second, an overview is presented of quality assessment at the undergraduate and two-year college level. Third, selected studies designed to identify quantifiable indicators of quality are reviewed.

Graduate Education

Beginning with Hughes (1925) and continuing through the prestigious American Council on Education (ACE) sponsored studies (Cartter, 1966; Roose & Andersen, 1970), reputational ratings of graduate programs have constituted the basis of attempts to address the issue of quality in higher education. The methodology incorporated in a majority of these studies involved a peer review, in which programs were rated by eminent faculty in the same discipline. Their ratings reflected the quality of graduate education and research in the system. These studies attempted to identify the outstanding research and teaching institutions by program and they have consistently identified 20 or 30 institutions, virtually ignoring the balance of the system (Lawrence & Green, 1980, p. 2).

Using a panel of distinguished scholars from each field, Hughes (1925) conducted the first comprehensive reputational study of graduate programs in American higher education. At the time of his study, only 65 American universities awarded the doctoral degree. Hughes ranked 38 of these universities in 20 disciplines according to the number of outstanding scholars each employed. During the next decade, the number of American

universities awarding the doctoral degree nearly doubled. This prompted a second study by Hughes (1934) in which 59 universities were ranked in 35 disciplines according to the quality of facilities and staff for the preparation of doctoral candidates. The stated purpose of both of Hughes' studies was to educate undergraduate students about various graduate programs. These studies went well beyond this purpose in establishing procedures for quality ratings of the nation's leading institutions through numerical ranks based upon the informal opinions of academicians.

For the next 20 years, the Hughes studies were regarded as authoritative. It was not until Keniston's (1959) work that an attempt was made to update the Hughes studies. Using department chairmen selected from the institutional members of the American Association of Universities as raters, Keniston ranked 24 graduate programs based upon a combined measure of doctoral program quality and faculty quality. These rankings were used to produce a rank-ordered list of the top 20 institutions which were compared with Hughes' results.

The major weakness of the Hughes and Keniston studies, according to Cartter (1966), was the uncontrolled geographical and rater biases. Other flaws in these studies noted by Cartter included the failure to distinguish measures of faculty quality from measures of educational quality, the failure to account for the biases of raters toward their alma maters, and the choice of department chairmen as raters. It was Cartter's opinion that the department chairmen were not necessarily the most distinguished scholars nor typical of their peers in age, specialization, or rank. They tended to be more conservative and thus to favor the traditional institutions.

Cartter's design of the ACE studies accounted for these criticisms. He took great care to assure the representation of various institutions and raters from all geographic areas. Cartter surveyed 106 institutions representing more than 1,000 graduate programs in 29 disciplines. The more than 4,000 survey respondents included senior and junior scholars as well as department chairmen. From a list of the institutions in alphabetical order, the respondents were requested to rate each doctoral program in their area of study on two components: quality of graduate faculty and effectiveness of the doctoral program. To support the representativeness of the raters, the respondents were requested to supply basic biographical information. The leading departments were ranked separately on the basis of the raters' responses on each of the components. In most disciplines, the rankings by each component were very similar. Where the discipline areas overlapped, Cartter compared his rankings with those of Hughes (1925) and Keniston (1959). Cartter found a high correlation between his rankings and objective institutional measures such as faculty salaries, library resources, and publication indices. His rankings correlated highly with Bowker's (1964), who used enrollment of graduate award recipients in institutional programs as a criterion. Cartter used these relationships as a primary point in his support of peer ratings for quality assessment.

The 1970 ACE-sponsored Roose-Andersen study essentially replicated Cartter's study. The Roose-Andersen study included 130 institutions across 29 disciplines. The ratings were based upon the same two components Cartter used in 1966: quality of graduate faculty and effectiveness of the doctoral program. The Roose-Andersen report presented ranges of raters' scores rather than absolute raw departmental ratings and ranges

of quality instead of specific institutional rankings. Even with these changes, the results of the Roose-Andersen study were very similar to those of the Cartter study (1966). Using the reputational rating procedures refined by the ACE studies, other researchers produced similar program or institutional rankings based on the two ACE criteria or similar criteria (Carpenter & Carpenter, 1970; Cartter & Solmon, 1977; Cole & Lipton, 1977; Cox & Catt, 1977; Gregg & Sims, 1972; Margulies & Blau, 1973; Munson & Nelson, 1977).

Lawrence and Green (1980) discussed the weaknesses in reputational ratings, the most apparent being their lack of agreement on the meaning of quality. The definition of quality varied according to disciplines, program areas, and individual raters. The lack of agreement on a definition of quality made program or institutional comparisons nonsensical. Lawrence and Green expressed the opinion that higher education was far too complex to rate on the basis of one or two dimensions. They stated that

> the ratings represent the subjective judgments of faculty and that they probably reflect prestige rather than quality. . . . and high prestige is translated to mean educational excellence. As a result, research and scholarly productivity are emphasized to the exclusion of teaching effectiveness, community service, and other possible functions; undergraduate education is denigrated; and the vast number of institutions lower down in the pyramid are treated as mediocrities, whatever their actual strengths and weaknesses. (pp. 15-16)

Dolan (1976) criticized the reputational approach because it tended to maintain the status quo. Dolan expressed the opinion that subjective ratings of program quality reflected elitist and traditionalist views of higher education that stifled or restricted change and innovation. Dolan believed that increasing consumer awareness in higher education demanded student involvement in any attempt to rate graduate programs.

Blackburn and Lingenfelter (1973) defended the ACE reputational ratings on the following grounds:

> (1) Panel bias has been largely eliminated by the careful selection procedures of the ACE studies; (2) subjectivity cannot be escaped in evaluation no matter what technique is used; (3) professional peers are competent to evaluate scholarly work, the central criterion in reputational studies; and (4) although not a sufficient condition of general excellence, scholarly ability is necessary for a good doctoral program. (p. 25)

Webster (1981) pointed out that the process usually produced results with face validity in that those programs or institutions considered to be of high quality by the educated general public were often rated highly.

Regardless of the criticisms or defenses of the reputational rating approach, none of the studies that have been cited have investigated specifically what information was useful for assessing the quality of graduate programs. Only one study of graduate education quality was found that investigated this topic. The Council of Graduate Schools (CGS) and the Educational Testing Service (ETS) sponsored a study that involved 73 departments divided among three fields--psychology, chemistry, and history--that were surveyed with the purpose of determining what information to use to assess quality (Clark, Hartnett, & Baird, 1976). Four major conclusions resulted from this study. First, it was determined that timely, relevant, and useful information (program characteristics) related to educational quality could be reasonably obtained. Second, approximately 30 program characteristics were identified as especially useful. Third, these program characteristics appeared to be applicable across diverse program areas. Fourth, two clusters of program characteristics were identified: research-oriented indicators and educational-experience indicators. The research-oriented indicators included department size, reputation, physical and financial resources, student ability,

and faculty publications. The educational-experience indicators were concerned with the educational process and academic climate, faculty interpersonal relations, and alumni ratings of dissertation experiences.

The CGS-ETS study used faculty, students, and alumni input in a separate peer-rating component of the study similar in approach to the ACE studies. One finding of this component of the study was that reputational ratings of graduate programs had little relationship to teaching and educational effectiveness as measured by the input of students and alumni. Clark et al. (1976) concluded that the peer ratings were based primarily on scholarly publications with little or no emphasis on the quality of instruction.

The CGS-ETS study demonstrated that information useful for determining educational quality could be identified. Furthermore, that study demonstrated that the information identified as useful consisted of multiple indicators of quality that appeared to be applicable across program areas. This is supportive of the view taken in this study that the multiple indicators of quality identified in the IRC project (Steuart & Rathburn, 1982) were representative of some underlying structure of the multiple indicators of quality, the dimensions of which should remain invariant across program areas. The Clark et al. (1976) study and the IRC study (Steuart & Rathburn, 1982) defined several dimensions of quality based upon the program characteristics identified in the respective studies as useful in assessing program quality. However, the dimensions were defined in both studies on the basis of the perceived similarity of the content of clusters of program characteristics and were not defined by the utilization of the technique of factor analysis as was done in this study.

Undergraduate Education

Although considerably fewer studies have been conducted to assess quality at the undergraduate level than at the graduate level, the studies rating undergraduate education have demonstrated that colleges differ substantially in traditional measures of quality. Jordan (1963), in a study involving undergraduate programs, found that those institutions that spent more on salaries for library staff and had higher numbers of library volumes per student tended to score higher on a quality index based upon multiple weighted factors. Brown's (1967) study of undergraduate education ranked colleges on the basis of eight criteria including total current income per student, proportion of students entering graduate school, proportion of graduate students, number of library volumes per student, total number of full-time faculty, faculty-student ratio, proportion of faculty with doctorate, and average faculty compensation. These two studies represented approaches to undergraduate quality assessment similar to those utilized for graduate programs. Lawrence and Green (1980) expressed the opinion that these and similar studies (Dube, 1974; Krause & Krause, 1970; Tidball & Kistiakowski, 1976) that used quality measures more typically associated with graduate quality assessment (e.g., publication record of students, percent of students who finish professional schools or terminal graduate degrees, etc.) failed in their purpose because they did not take into account the "special nature of the undergraduate experience" (p. 33).

Astin, through a series of studies (1965, 1971; Astin & Henson, 1977) approached one specific aspect of undergraduate quality that he termed the selectivity index. Astin (1971) defined the selectivity index as a relative measure of the academic ability of a college's entering freshmen.

In another study involving the selectivity index, Astin and Henson (1977) used ACT and SAT scores to approximate the selectivity of all accredited two- and four-year institutions. Astin and Henson defended their approach on the basis of its acceptance by the mainstream of faculty and administrators in higher education (p. 2). The validity of the approach was supported by its positive correlations with selected institutional characteristics such as student-faculty ratios (Astin & Solmon, 1979).

In a related study, Astin developed further the selectivity index by examining the preferences of academically talented students for various institutions (Astin & Solmon, 1979). Although they realized that this measure was confounded by a number of variables such as institutional popularity and regionalism, Astin and Solmon maintained that a measure of an institution's drawing power for highly able students was a valid quality measure (p. 47).

In a later study of undergraduate education quality, Astin and Solmon (Astin & Solmon, 1981; Solmon & Astin, 1981) expanded their view of quality. They utilized faculty members representing seven disciplines from institutions in four states (California, Illinois, New York, and North Carolina) to rate institutions from a national list and a state list. The state list included those institutions in a rater's state that awarded a minimum of five undergraduate degrees in a rater's field during 1977. The national list was composed of 100 of the "most visible institutions in the rater's field" (Astin & Solmon, p. 14). Each rater was asked to evaluate each institution from both lists according to six quality criteria including overall quality of undergraduate education, preparation of students for graduate and professional school, preparation of students for employment after college, faculty commitment to undergraduate

teaching, scholarly or professional accomplishments of faculty, and innovativeness of curriculum and pedagogy (p. 24).

Utilizing a factor analysis of the mean ratings on each of the quality criteria for each of the undergraduate disciplines, Astin and Solmon (1981) concluded that

> these ratings showed that the seven fields form a single "overall quality" dimension. In practical terms, this means that quality differences among fields at a given institution tend to be minimal, and that ratings of one department may suffice as an estimate of the quality in the other departments at the institution. (pp. 14-15)

Considering that only six quality criteria were used in the study, the conclusion appeared warranted.

Probably the best known studies of undergraduate quality, the Gourman studies (1967, 1977), provided little explanation of the procedures used to arrive at the reported ratings. Scores on two sets of variables--strength of an institution's academic departments and quality of nondepartmental areas--were used to produce an average academic department rating, an average nondepartmental rating, and an overall "Gourman rating" for each institution.

Although the Gourman ratings were accepted as a viable measure of undergraduate quality, several of the assumptions used in the ratings were questionable. Gourman assumed that, at minimum, 10 years were required following graduation to produce an excellent classroom teacher and thus rated older faculty higher. Gourman gave equal weight to faculty effectiveness, public relations, library, a college's alumni association, and the athletic-academic balance as measures of institutional quality. Gourman held a bias toward larger institutions, consistently rating them higher than smaller liberal arts colleges (Lawrence & Green, 1980). In

1977, Gourman changed the format of his ratings, making it similar to that of the 1970 Roose-Andersen study. Gourman rated 68 undergraduate programs in 1977, again providing no information on the procedures used in developing the ratings.

Utilizing approaches such as those discussed, other researchers have addressed the issue of quality in undergraduate education (Johnson, 1978; Nichols, 1966; Solmon, 1975). Other, possibly less academic, attempts to evaluate undergraduate quality included the popular college guides (e.g., Hawes Comprehensive Guide to Colleges, 1978). Webster (1981) criticized many of these attempts on the basis of their limited view of the undergraduate experience. Central to his criticism was the lack of emphasis on undergraduate teaching in preparation for the job market and the overriding view of undergraduate programs serving primarily as preparatory periods for graduate study.

Very little research has been conducted in the community/junior college setting in relation to the quality issue. In general, many of the premises underlying traditional views of quality in higher education run in opposition to the basic principles of the community college philosophy. An example of this is the discrepancy between the selectivity index (Astin & Solmon, 1979) and the open door admission policy of most community colleges.

One of the more quoted studies of educational quality in the community college setting involved the identification of quality indicators from peer opinions expressed in evaluations of selected junior colleges during accreditation team visits (Walters, 1970). Walters identified 58 specific indicators from a list of more than 500 recommendations made in accreditation team reports on 126 public junior colleges from 1960 to 1968. Most

of the indicators related to college procedures, the efficiency of operations, staffing levels, and organizational structure. Walters postulated that the 58 indicators, taken collectively, described a quality public junior college. Only two of the indicators were based on any specific quantitative measures. Another study of educational quality in the two-year college, the Pike study (1963), involved an analysis of the relationship of current expenditures, enrollment, and expenditures per student to certain variables associated with educational quality in junior colleges in Texas.

The IRC project (Steuart & Rathburn, 1982), which generated the data used in the present study, surveyed 631 administrators representing 24 of Florida's public community colleges to determine what information was perceived as useful in making decisions about the quality of programs or services offered by their colleges. In that project, the administrators rated 434 program characteristics for degree of usefulness in quality-evaluation decision making. More than 100 program characteristics were identified as highly useful. The program characteristics identified as highly useful were organized on the basis of perceived similarity of content into 12 types of information including the need for and structure of a program, program size, program costs, program utilization rates, support services related to a program, information on students entering a program, information on students currently enrolled in a program, information on faculty or staff associated with a program, information from external or internal evaluations of a program, quantitative outputs of a program, ratings of a program by various types of raters, and information on students transferring from a program to upper division (pp. 68, 145-146).

Similar to most of the studies of quality in graduate education, none of the studies of quality in undergraduate education except the IRC project (Steuart & Rathburn, 1982) investigated the usefulness in quality-evaluation decision making of the various quality indicators used in the studies. Also, although multiple program characteristics have been used as indicators of quality, no study has attempted to identify any underlying dimensions for the multiple indicators except Astin and Solmon (1981). Although the indicators of quality in the Astin and Solmon study were so broad and so few that the dimensions identified are probably spurious, they did demonstrate the use of the factor-analytic technique in identifying underlying dimensions of indicators of quality.

Quantifiable Approaches to Quality

In recent years, higher education researchers have explored numerous ways of providing objective measures of educational quality. Many of these attempts have involved correlating various quantifiable measures with established rankings of institutional quality. These measures included, among others, institutional size (Elton & Rose, 1972; Hagstrom, 1971), research productivity (Drew, 1975; Wispe, 1969), publication productivity (Lewis, 1968), amount of money spent (Ousiew & Castetter, 1960), and number of library volumes (Lazarsfield & Thielens, 1958). Many of these "correlates of prestige" (Lawrence & Green, 1980, p. 23) used the popular ACE ratings as their basis for comparison. Cartter (1966), anticipating the identification of quantifiable quality indicators in his ratings, stated that such indicators "are for the most part 'subjective' measures once removed" (p. 4).

The list of factors was lengthy that positively correlated with reputational quality ratings. Blackburn and Lingenfelter (1973) listed the

following items as being positively correlated with the 1966 ACE ratings:

1. Magnitude of the doctoral program.
2. Amount of federal funding for academic research and development.
3. Non-federal current fund income for educational and general purposes.
4. Baccalaureate origins of graduate fellowship recipients.
5. Baccalaureate origins of doctorates.
6. Freshman admissions selectivity.
7. Selection of institutions by recipients of graduate fellowships.
8. Postdoctoral students in science and engineering.
9. Doctoral awards per faculty member.
10. Doctoral awards per graduate student.
11. Ratio of doctorate to baccalaureate degrees.
12. Compensation of full professors.
13. The proportion of full professors on a faculty.
14. Higher graduate student/faculty ratios.
15. Departmental size of seven faculty members or more. (p. 11)

Fotheringham (1978) described traditional quality indicators as including context, faculty input, faculty-student interaction, and student input. Fotheringham defined context as "the setting for the educational process" (p. 17). The context variables included number of library volumes, administrative policies, physical facilities, and similar variables. Pike (1963), in his study of the relationship between 72 variables associated with educational quality including enrollment, current expenditures, and expenditure per student, found expenditures to be the most important measure of context. Banghart, Kraprayoon, and Clewell (1978) identified other context variables including curriculum, administrative practices, and amount of external funding.

Meder (1955) defined faculty input as including an instructor's training, skill, ability, and morale. Blackburn and Lingenfelter (1973) included degrees, awards, faculty compensation, and post-doctoral studies as indicators of faculty input. Other faculty input indicators

included research productivity (Hagstrom, 1971), publication productivity (Somit & Tanenhaus, 1964) and faculty size (Balderston, 1970). The faculty input indicators identified as most difficult to measure included faculty morale, vigor, cohesion, and progressiveness that Balderston (1974) suggested could only be measured subjectively.

Faculty-student interaction has been traditionally defined as the faculty-student ratio (Meder, 1955). That definition has been expanded to include the accessibility of the faculty (Roose & Andersen, 1970) as well as the extent and nature of the faculty contact with students (Fotheringham, 1978).

Student input indicators of quality have often been held as the most valuable type of indicator. Fotheringham (1978) defined student input as the characteristics of the student at the time of admission. Blackburn and Lingenfelter (1973) proposed a more comprehensive definition simply as the students' quality. Many researchers concluded that not enough has been done to control for variations in student input indicators when measuring various outcome indicators of quality (Richards, Holland, & Lutz, 1966; Rock, Centra, & Linn, 1969).

Fotheringham (1978) cited three more categories of quality indicators that he labeled output, student change, and intellectual climate. Output was described as including both faculty output (publications and other productivity measures) and student output (accomplishments of students following graduation). Variability in the specific measures used to assess output indicators was reflected in the work of Keller (1969) and Lawrence, Weathersby, and Patterson (1970).

The student change indicators related to the extent of learning that took place during the students' enrollment (Turnball, 1971). Ostar

(1973) described this as the value-added concept. It was his opinion that in the assessment of the development of students, specific attention should be given to their initial abilities and their goals. Measures of student change included post-graduate employment, personal achievements, motivation, and achievements in graduate school according to Fotheringham (1978).

Fotheringham (1978) defined intellectual climate as "an attitude toward learning and scholarship shared by students, faculty, and administration" (p. 26). Several researchers have expressed the opinion that campus climate is of primary importance in assessing institutional quality (Astin, 1963; Boyer, 1964; Bowen, 1963). Indicators in this category included both academic attributes, such as faculty concern for scholarship, and non-academic attributes such as students' residential experience, democratic participation of the students in campus affairs, and counseling or other supplementary services.

Although multiple quantifiable indicators of quality have been identified in these studies, none of the studies investigated the possibility of identifying underlying dimensions of the multiple indicators to facilitate providing information to decision makers in a format useful in quality-evaluation decision making. The IRC study (Steuart & Rathburn, 1982) included some program characteristics representative of many of these quantifiable indicators of quality which is another reason the data from that study provided an excellent opportunity for identifying underlying dimensions for information useful in program quality-evaluation decision making. A discussion of the utility of the technique of factor analysis for identifying any underlying dimensions of a multi-variate data set is presented in the next section of this chapter.

Determining Underlying Dimensions: Factor Analysis

In the decision-oriented model of evaluation as described by Stufflebeam et al. (1971), once the information useful for making an evaluation has been determined in interaction with the decision maker, that information should be provided to the decision maker in a format useful to the decision maker. If relatively few items of information are involved, then the means of providing the information in a useful format would appear relatively straightforward. However, from the review of selected studies on quality evaluation in higher education, multiple indicators of quality have been identified. In the IRC study (Steuart & Rathburn, 1982), more than 100 program characteristics were identified as highly useful in making quality-evaluation decisions. Providing such a wide array of information in a format useful to a decision maker is a problem. Craven (1980) indicated that "providing the desired information in an appropriate format" (p. 111) is a major concern if evaluation processes are to effectively address the higher education issues of the 1980s.

Applicability of Factor Analysis

The situation of administrators in higher education attempting to use multiple indicators of quality when making quality judgments about programs or services is similar to the situation psychologists faced when evaluating human personality: interpreting multiple measures to describe or evaluate a person (Harman, 1976, p. 4). This was the context for the origin of factor analysis in psychology. It was developed as a technique to determine dimensions of personality that would facilitate the evaluation of personality (Cattell, 1950, pp. 26-27). Although it was developed within the field of psychology, the mathematical

techniques involved are not limited to psychological applications (Harman, 1976, p. 4). Cattell (1966) stated that the use of factor analysis was particularly advantageous where "the number of variables to be watched over and thought about is bewilderingly large . . . [and where] there has been little success after several years in reaching agreement on the major concepts [in the area of inquiry]" (p. 175). Both of these criteria appear to apply to the field of quality evaluation in higher education. Burt (in Cattell, 1966) has stated that the primary aim of factor analysis is "to discover principles of classification [of individuals or variables]" (p. 268).

Simply because the technique of factor analysis originated in the field of psychology, applications of factor analysis were primarily in that field up until increasing accessibility to computers facilitated the use of the technique (Harman, 1976, p. 7). Harman (1976) has collected more than 200 studies using factor analysis in fields other than psychology including such diverse fields as economics, medicine, the physical sciences, political science, sociology, and regional science (p. 7). Also, he cited a number of taxonomic applications in fields other than psychology (pp. 7-8). Harman stated that

> Unlike the field of psychology, in which theory has been primary and the factor-analytic model has been used to test and modify such theory, the application of factor analysis in the areas noted has been exploratory, almost exclusively, in the hope of bringing order out of the relationships among the many variables that could now be investigated with the aid of the computer. (p. 8)

Guertin and Bailey (1970) suggested numerous applications for factor analysis in the field of educational psychology (Chapter 14). The pervasiveness of its use in research in higher education is indicated by the numerous entries under the subject heading "factor analysis" in

each issue of Resources in Higher Education published by the Educational Resources Information Center (ERIC). The following recent studies in higher education are cited because, as in this study, factor analysis was used for discovering dimensions or categories among a set of variables.

Smart (1975) used the technique in a survey of students, faculty, and administrators to determine salient dimensions of 47 institutional goals rated by respondents for degree of importance to a college. In a survey of a stratified random sample of 722 Minnesota citizens, Biggs, Brown, and Kingston (1977) used factor analysis to determine "categories of educational values" (p. 157) from respondents' ratings of the importance of various university goals and activities, the importance of various academic fields, and the importance of various reasons for students attending the University of Minnesota. During the development of a model for evaluating educational innovations, Bess and Hayes (1970) used factor analysis as a means "of assembling meaningful clusters of student characteristics into subcultures" (p. 44) from students' responses to a questionnaire that was devised to measure a combination of student personality characteristics, value orientations, attitudes, goals, perceptions, and behaviors. In a study to investigate the possibility of clustering academic departments on dimensions that could provide an equitable basis for departmental funding, Dressel and Simon (1976) used factor analysis on 35 descriptive variables representing various characteristics of the instructional load and output of academic departments to determine the dimensions for grouping the departments.

At the University of Toledo, a study was done with an objective very similar to the objective in this study (Perry & Lind, 1976). In

the Perry and Lind study, factor analysis was used on the ratings by 140 department chairpersons and 272 program graduates of the importance of 33 criteria in evaluating academic programs to determine "what latent factors or dimensions were involved in the data" (p. 20). In their most recent reputational study of undergraduate educational quality, Solmon and Astin (1981) used factor analysis to determine patterns among the ratings of seven discipline areas in selected American undergraduate institutions by faculty representing undergraduate institutions in four selected states.

Each of these studies is illustrative of the use of factor analysis for discovering categories or dimensions of an underlying pattern within a set of variables. It appeared appropriate in this study to use factor analysis to determine the underlying dimensions of the multiple indicators of quality identified in the IRC project (Stuart & Rathburn, 1982) to use in developing guidelines for organizing the identified information into a format useful to administrators in making quality-evaluation decisions about programs.

Definition of Factor Analysis

Spearman is generally credited with the origin of factor analysis in his development of a psychological theory involving the specification of a general factor and a number of specific factors related to describing general intelligence: the two-factor theory (Harman, 1976, p. 3). Finding Spearman's theory insufficient to describe a battery of psychological tests, other psychologists explored the possibility of extracting several general or common factors from a matrix of correlations among tests. These explorations led to the development of multiple-factor analysis (Harman, p. 4).

The principal concern of factor analysis is the resolution of a set of variables into a smaller number of categories or "factors." The resolution is accomplished by analysis of the correlations among the variables within the set. A satisfactory resolution produces a set of factors (or categories or dimensions or variables) smaller than the original set of variables that conveys the essential information of the original set of variables. Thus, "the chief aim [of factor analysis] is to attain scientific parsimony or economy of description" (Harmon, p. 4). Economy of description is precisely the goal in providing to decision makers in a useful format the information represented by multiple indicators of quality. As Fox (1969) stated, factor analysis is a procedure for "identifying the underlying structure of the interrelationships expressed in the correlational matrix [of a set of variables]" (p. 216). The procedure estimates the minimum number of separate variables or dimensions, called factors, necessary to provide the information contained in the correlation matrix (Fox, p. 216).

Steps in Factor Analysis

Fox (1969) described the procedure of factor analysis as typically involving a five-step process (pp. 216-218). The first step is to identify the variables to be studied. The second step is to create a matrix of correlations expressing the correlation between each pair of variables in the set of variables being studied. The third step is "to put this matrix through the first computational process of factor analysis that produces what is called an unrotated matrix of principal components, from which the minimum number of separate factors required to account for the data can be identified" (p. 217). A full description of the calculation procedures is presented in Harman (1976).

Harman (1976) described two basic approaches to the calculations involved (pp. 14-15). Within the framework of the linear mathematical model used in factor analysis, the calculations can either extract the maximum variance or best reproduce the observed correlations (p. 14). The method for the reduction of a large body of data so that the maximum variance is extracted was first proposed by Pearson and later developed as the method of principal components or component analysis (p. 14). In contrast to the maximum variance approach is the classical factor-analysis model developed to maximally reproduce the correlations. It is generally called common-factor analysis because each of the observed variables involved in the analysis is defined linearly in terms of a number of common factors and a unique factor (p. 15). "The common factors account for the correlations among the variables, while each unique factor accounts for the remaining variance (including error) of that variable" (p. 15). The common-factor analysis approach was used in this study because the intent was to determine as clearly as possible the dimensions (interrelationships) among the variables involved and not to determine the amount of variance attributable to a variable or a group of variables (See Guertin & Bailey, 1970, pp. 82-83).

The method of calculation generally used for common-factor analysis was described by Thurstone and has been labeled the "principal axes solution" (in Guertin & Bailey, 1970, p. 61). The essential difference between the methods is whether in the mathematical computations unities are inserted in the diagonal of the correlational matrix (component analysis) or whether "communalities" are inserted (common-factor analysis) (Harman, 1976, p. 70). According to Guertin and Bailey (1970), the use of unities in the diagonal of the correlation matrix causes the

intercorrelation matrix to take on a higher rank than it would with values less than unity in the diagonal (p. 33). Since the object in factor analysis is to find the minimum number of factors or dimensions or variables necessary for economy of description of the total set of variables, values less than one are desired in the diagonal (Guertin & Bailey, p. 33). The values less than one in the diagonal are called "communalities." The communalities express the amount of the common-factor variance (the variance shared with all the other variables in the analysis) (Guertin & Bailey, p. 33). The correlation matrix with communalities rather than unities in the diagonal is called the reduced intercorrelation matrix (Guertin & Bailey, p. 33).

One of the problems encountered in common-factor analysis is that the appropriate communalities are not easily computed with precision and various methods of estimating them have been developed. The best estimate of the communalities appears to be the squared multiple correlations of each variable with the remaining variables (Guertin, 1977, p. 21). On the other hand, Harman (1976) stated that "it matters little what values are placed in the principal diagonal of the correlation matrix when the number of variables is large (say, $n \geq 20$)" (p. 86), because the number of values in the diagonal is relatively small compared to the many values off the diagonal so the factorial results are little affected (p. 86). However, the use of communalities in the diagonal prior to factor extraction makes possible the obtaining of the maximum amount of common-factor variance, a chief emphasis of common-factor analysis (Guertin, 1977, p. 22).

Once the principal axes factors have been extracted from the reduced intercorrelation matrix through the processes involved in step three,

they can then be rotated to gain the clearest view of the common-factor space or configuration. This is step four of the factor-analysis process described by Fox (1969, p. 217). Rotation is performed mathematically, but the concept of rotation is based upon geometry. A clear description of the relationship may be found in Guertin and Bailey (1970, pp. 26-34 and Chapter 6). The reason for rotation is that although the intial factors may be mathematically satisfactory solutions, the factors themselves may have little meaning relative to determining constructs or principles of concern to the investigator (Guertin & Bailey, 1970, pp. 87-88).

Since the principal axes method extracts the maximum possible common variance, the primary decision in rotation becomes that of determining the number of principal axes to carry into rotation to gain the clearest picture of the common factors (Guertin, 1977, p. 22). At this point in the factor-analysis process, there is encountered another major problem: what criterion or criteria to use to decide what number of factors to carry into rotation (Guertin & Bailey, 1970, Chapter 7). Guertin (1977) stated that the universally accepted criterion that is followed is Thurstone's principle of simple structure that yields factors that are relatively invariant across studies (p. 22). Guertin and Bailey (1970) asserted that the simple structure criteria not only provide a unique solution but at the same time assure meaningful factors (p. 42). In simplest terms, the concept of simple structure dictates that both variables and factors be described by a minimum number of sizable loadings (Guertin, 1977, p. 22). In reference to the matrix representation of factors (columns) and variables (rows), the concept of simple structure specifies that the columns (factors) should have the largest possible

number of zero or negligible loadings (values), the rows (variables) should have the largest possible number of zero or negligible loadings (values), and every pair of columns (factors) should have the largest possible number of values approaching zero in one column (factor) (Guertin & Bailey, 1970, p. 99). The ideal situation would be to have each variable have a high loading on only one of the factors and for each factor to have only a few variables with high loadings with all the other variables having loadings approaching zero on that factor (Guertin & Bailey, 1970, p. 98).

To approximate the ideal of simple structure for a given factor matrix, the factors may be rotated in either an oblique or an orthogonal fashion (Guertin, 1977, p. 22). As with the term rotation, these terms reference a geometric perspective. Conceiving of the factors as dimensions (vectors), an orthogonal rotation assumes that the factors are unrelated and places the factors (vectors) in relation to each other at 90° angles. An oblique rotation is not held to that criterion. According to Guertin and Bailey (1970), with the use of real data, true simple structure must provide for correlated factors so an orthogonal representation of factor space is unsatisfactory (p. 100). They recommend the use of the oblique rotation procedures and if that results in factors that are only slightly correlated, then an orthogonal rotation may be performed (p. 101). It is their opinion that it is necessary to use oblique rotation procedures to properly represent underlying dimensions or factors of a set of variables (p. 89).

The utilization of rotation to identify simple structure completes step four of the factor-analysis process as outlined by Fox (1969, p. 217). The resulting matrix is the factor pattern and the values forming

this matrix are called the factor loadings (Fox, 1968, p. 217; Harman, 1976, p. 15). The loadings have the same characteristics as correlation coefficients in that they are two-digit decimal numbers in the range of +1.00 to -1.00 through a midpoint of zero. A variable can have a positive or negative loading on a factor and the sign indicates whether the factor operates to raise or lower the value of that particular variable (Fox, 1969, pp. 217-218). The magnitude of the loading indicates the importance of the factor on each variable (p. 218).

The fifth and final step in the factor-analysis process as outlined by Fox (1969) is for the researcher to label the factors (p. 218). Generally, this involves determining the variables that have relatively high loadings on a factor and then abstracting a term or concept that reflects the content of these variables (p. 218; see also Guertin & Bailey, 1970, p. 87).

This description of factor analysis has presented only the salient features of the process related to this study. A thorough discussion of factor analysis may be found in Harman (1976). For the less mathematically inclined person, Guertin and Bailey (1970) present an excellent description of factor analysis.

CHAPTER III
METHODOLOGY

The Problem

The problem in this study was the identification of any underlying dimensions within the multiple quality indicators rated by administrators in Florida public community/junior colleges as highly useful in making program quality-evaluation decisions. The research questions were: (1) What is the "best" factor structure for the usefulness ratings? (2) For the identified "best" factor structure, are there significant differences in the mean factor scores between classifications of respondents by program area and between classifications of respondents by administrative area?

Description of Data Used

The data used in this study were generated in the IRC project (Steuart & Rathburn, 1982). A full description of the methodology used in that project is in Appendix B.

The survey population consisted of all administrators in Florida public community/junior colleges who were classified by their institutions as executive, administrative, or managerial personnel under part three of the "Personnel and Salary Report (SA-1)" as defined in the Community College Management Information System Procedures Manual of the State of Florida (Division of Community Colleges, 1980, pp. 10.1-10.2). There were 631 administrators identified and 450 respondents representing 24 of Florida's 28 public community/junior colleges for a response rate of 71.3% (Steuart & Rathburn, 1982, p. 49).

The responding administrators rated 434 program characteristics, contained in a survey questionnaire (Appendix C), for degree of usefulness in program quality-evaluation decision making. The rating scale was

1 = ESSENTIAL ("I do not see how I could make a judgment about the quality of a program without considering this characteristic.")

2 = VERY USEFUL ("I would feel hindered in making a judgment about the quality of a program without considering this characteristic, but I would make a judgment without it.")

3 = SOME USEFULNESS ("Although I would like to consider this characteristic in making a judgment about the quality of a program, I would not feel hindered in making a judgment without it.")

4 = LITTLE OR NO USEFULNESS ("I probably would not consider this characteristic in arriving at a judgment of the quality of a program.") (Steuart & Rathburn, p. 144)

Also, any program characteristics that were considered "not applicable" by the raters were rated with a "4" (Steuart & Rathburn, p. 144).

Each respondent was assigned a "position code" (p. 46) based upon a self-reported position title on each questionnaire. The position codes, a description of the position titles associated with each code, and frequencies of respondents for each code are reported in Appendix D.

The program areas and administrative areas used to classify the responding administrators were defined as follows:

Program Areas

Advanced and Professional Program Area--commonly referred to as university parallel, the first two years of a baccalaureate program.

Occupational Program Area--or vocational-technical education, terminal certificate or degree programs preparing students for employment in a specific trade or field.

Community Instructional Services Program Area--programs of short, credit or noncredit classes designed to provide enrichment for students.

Developmental Program Area--of compensatory education, designed to assist students in improving deficient basic skills necessary for program-required work.
Student Services Program Area--various auxilliary services provided to students facilitating their progress through one of the program areas including such services as counseling, student activities, admissions, financial aid, etc.

Administrative Areas

General Administration--respondents with responsibilities of a general nature in the operation of the college's programs or services.
Academic Affairs--respondents with responsibilities of administering one or more of the college's academic programs.
Student Affairs--respondents with responsibilities of administering one or more of the college's student services programs.
Community Instructional Services--respondents with responsibilities of administering the college's adult and continuing education or community instructional services programs.
Business Affairs--respondents associated with the operation of the business offices (budget, accounting, personnel, etc.) of the college.
President--the chief executive officer of the college. (Steuart & Rathburn, 1982, Appendix A)

Based upon their position titles, only respondents who were perceived as having major responsibility in one of the five program areas were included in the analysis by program areas. For example, presidents, vice presidents, research and planning directors, and other administrators with responsibilities across program areas were not included in the analysis by program areas. All respondents were included in the analysis by administrative areas. Operational definitions for these classifications are given in Appendix A.

Mean ratings were calculated for each program characteristic in the questionnaire. Using these means, ranks were calculated for the program characteristics based upon the responses of all respondents (N = 450). When the ranks for two or more program characteristics were tied, the tied values received the mean of the ranks that would have been assigned had the ranks not tied (Steuart & Rathburn, 1982, p. 54).

Only those program characteristics that were in the top quarter of the ranked mean ratings were discussed in the presentation of results for all respondents (N = 450) in the IRC report (Steuart & Rathburn, 1982, p. 54). All 108 program characteristics in the top quarter had a mean rating on the "essential" side of the rating scale (p. 62). The mean ratings of these 108 program characteristics ranged from 1.38 to 2.05 (p. 54). The analyses in this study included only these 108 program characteristics. The means for these program characteristics are reported in Appendix E.

Analysis of the Data

Research Question One

To discover the best factor structures for the usefulness ratings, two sets of data were used for analysis. An analysis was performed based upon those respondents who rated all 108 program characteristics (i.e., respondents with missing data were excluded). There were 315 such cases. The same analysis was performed using the ratings of all 450 respondents by changing any missing ratings for an item to the mean ratings for respondents rating that item. The use of all 450 respondents was desirable so that all respondents could be included in the comparisons of factor scores between program areas and between administrative areas (research question two). The following procedures for obtaining the best factor structure were performed on each of these sets of data and the results compared through use of the coefficient of congruence for matching factors, inspection of the difference in the root-mean-square values, and the criteria for simple structure (Guertin & Bailey, 1970, p. 99; Harman, 1976, pp. 343-344).

The first step in the analysis was the production of the correlation matrices representing the correlations between the ratings of all possible pairs of the 108 program characteristics. These correlation matrices constituted the basis for what has been defined as an R analysis (Cattell, 1950, p. 28). An R analysis consists of looking at the interrelationships of variables (program characteristics) rather than cases (respondents)(Cattell, 1950, pp. 30-31). The correlation coefficients represented the degree of similarity in the ratings by the respondents of any pair of program characteristics.

The correlation matrices were factor analyzed using the principal axes method with iterations. It has been described as the most widely used technique in determining the initial principal axes (Guertin & Bailey, 1970, p. 62; Harman, 1976, p. 133). Following Guertin and Bailey's (1970, p. 101) suggestion, the principal axes matrices were submitted initially to an oblique rotation to determine whether the factors were essentially uncorrelated. The direct oblimin rotation procedure (Jennrich & Sampson, 1966) was used with gamma equal to zero. Program P4M was used in the BMDP Biomedical Computer Programs P-Series 1979 (Dixon & Brown, 1979). The squared multiple correlations were used as the initial estimates of the communalities (Guertin & Bailey, 1970, pp. 147, 163). The number of factors to carry into successive rotations was determined by inspecting the results for decrements in the latent roots, the cumulative percentages of common variance for which successive factors accounted, and the criteria for simple structure (Guertin & Bailey, 1970, pp. 115-120). Since the factors proved to be essentially uncorrelated, the principal axes matrices were then submitted to an orthogonal rotation. The varimax method for orthogonal rotations was used since

there appeared to be general agreement that this method was preferred with regard to giving the closest approximation to simple structure (Guertin & Bailey, 1970, pp. 98-99; Harman, 1976, Chapter 14). Again the number of factors to carry into successive rotations was determined by inspecting the results for decrements in the latent roots (eigenvalues), the size of the latent roots, the cumulative percentages of common variance for which successive factors accounted, and the criteria for simple structure (Guertin & Bailey, 1970, pp. 115-120). The factor procedure in the SAS computerized package was used for the orthogonal rotations (SAS Institute, Inc., 1979, pp. 203-210).

The resulting factor solutions from both sets of respondents (N = 315 and N = 450) were compared for congruence using the coefficient of congruence (Harman, 1976, pp. 343-346). If the coefficient of congruence between any pair of factors was .90 or greater, the factors were considered congruent (Mulaik, 1972, p. 355). Since the factor structures were congruent, the factor structure based upon the set of 450 respondents (with missing values set equal to the mean value for that variable) was selected as the best representation of the underlying dimensions of the 108 indicators of quality.

The loadings of the variables on each factor in this factor structure were inspected. Any variable having a loading of .50 or greater was considered in determining the meaning of a factor (Guertin & Bailey, 1970, pp. 78, 81). Based upon the nature of the program characteristics with a .50 or greater loading, each factor was described. With the description of the factor structure, the methodology involved in the first research question was completed.

Research Question Two

For the second research question, the best factor structure was used, as determined by the methodology for the first research question, to calculate factor scores for the respondents. The regression method was used for the factor score computations (SAS Institute, Inc., 1979, p. 204). The score procedure in the SAS computerized package was used (SAS Institute, Inc., 1979, pp. 371-372). Mean factor scores were determined for the respondents classified by the described program and administrative areas.

The differences in mean factor scores between the program areas and between the administrative areas were tested for significance using the t statistic at .10 level of significance. Since the variances of the factor scores for some of the program areas and some of the administrative areas were significantly unequal, as tested by use of the F statistic at the .05 level of significance, it was inappropriate to perform an analysis of variance prior to testing for significant differences between mean factor scores. Also, since the likelihood of a Type I error increases as the number of contrasts tested increases, the Bonferroni correction for the t statistic was used (Myers, 1979, pp. 298-300). Essentially, this correction results in rejection of the null hypothesis (i.e., there is no significant difference in the means) when the obtained t exceeds the value of t in the standard t table at a level of significance equal to the selected level of significance for the comparisons (.10 in this study) divided by the number of comparisons. Since there were 10 comparisons between the program areas and 15 comparisons between the administrative areas, the obtained t for these comparisons had to exceed the value in the t table at .01 (.10 divided by 10) and .007 (.10

divided by 15) levels of significance, respectively, for rejection of the null hypothesis. Where the variances were significantly different for the factor scores being compared, the t value was calculated on the assumption of unequal variances (SAS Institute, Inc., 1979, p. 425). The t-test procedure in the SAS computerized package was used (SAS Institute, Inc., 1979, pp. 425-426).

Using the results of these analyses, guidelines were forumlated for organizing the multiple indicators of quality into a format useful to administrators in Florida public community/junior colleges in making quality-evaluation decisions about programs offered by their colleges.

CHAPTER IV
RESULTS AND DISCUSSION

There were 450 administrators representing 24 of Florida's 28 public community colleges who rated 434 program characteristics, contained in a survey questionnaire (Appendix C), for degree of usefulness in program quality-evaluation decision making. The rating scale ranged from 1 (essential) to 4 (little or no usefulness). Only the 108 program characteristics in the top quarter of ranked mean ratings were included in the factor analysis. Based upon all 450 respondents, the mean ratings for each of these 108 program characteristics are presented in Appendix E. All of the 108 program characteristics in the top quarter of ranked mean ratings had a mean rating on the "essential" side of the rating scale. The mean ratings of the 108 program characteristics ranged from 1.38 to 2.05. The mean ratings of each of the 108 program characteristics, based upon the 315 respondents who rated all of them, are reported in Appendix E. These mean ratings ranged from 1.36 to 2.13.

The Pearson product-moment correlation coefficients for the intercorrelations of the 108 program characteristics, based upon the ratings by all respondents (N = 450) with missing values for any program characteristic set equal to the mean rating for that program characteristic, are presented in Appendix F. The Pearson product-moment correlation coefficients for the intercorrelations of the 108 program characteristics, based upon the ratings by respondents with no missing responses (N = 315),

are presented in Appendix G. These two sets of correlation coefficients were used in the factor analysis.

Factor Analysis Results

The iterated principal axes factor-analytic method as applied to both sets of correlation coefficients resulted in a solution with 21 principal axes. The principal axes solution based upon N = 450 is presented in Appendix H with the final communality estimates and eigenvalues. The principal axes solution based upon N = 315 is presented in Appendix I with the final communality estimates and eigenvalues.

For the principal axes solution based upon N = 315, the latent roots (eigenvalues), differences in the latent roots, cumulative variance for which successive axes accounted, and the percentage of common variance for which successive axes accounted are presented in Table 1. These were the values that were examined to determine the number of factors to carry into the initial rotations. In factor analyses, the latent roots generally fall off rapidly at first because systematic common variance is being extracted. The roots start decreasing almost linearly as mostly error variance is being extracted. It is generally accepted that one criterion for the cutoff point for the number of factors to rotate comes just before this linear descent (Guertin & Bailey, 1970, p. 117). Although the differences in the latent roots decreased greatly after factor 5, they did not become linear until after factor 10 (Table 1). Using the differences in the latent roots, the rotation of 10 factors was indicated. The rotation of 10 factors accounted for 80.7% of the common variance compared to 64.5% accounted for by the rotation of five factors. Following the suggestion of Guertin and Bailey (1970, p. 117), one more and one less than the indicated number of factors were rotated with the

Table 1

Variance Accounted for by Successive Principal Axes for N=315

Principal Axes	Eigenvalues	Differences	Cumulative Variance	Percentage of Common Variance
1	26.616	--	26.616	36.3
2	7.688	18.928	34.304	46.8
3	5.985	1.703	40.289	54.9
4	3.902	2.083	44.191	60.2
5	3.112	.790	47.303	64.5
6	2.995	.117	50.298	68.5
7	2.642	.353	52.940	72.1
8	2.332	.310	55.272	75.3
9	2.113	.219	57.385	78.2
10	1.863	.250	59.248	80.7
11	1.822	.041	61.070	83.2
12	1.704	.118	62.774	85.5
13	1.553	.151	64.327	87.7
14	1.469	.084	65.796	89.7
15	1.277	.192	67.073	91.4
16	1.208	.069	68.281	93.1
17	1.155	.053	69.436	94.6
18	1.082	.073	70.518	96.1
19	1.016	.066	71.534	97.5
20	.949	.067	72.483	98.8
21	.894	.055	73.377	100.0

results compared according to the criteria for simple structure. According to Guertin and Bailey (1970), "the factors are best located when the produced structure is as simple as possible" (p. 98). The three general criteria for simple structure are: (1) the factors should have the largest possible number of loadings approaching zero; (2) the variables should have the largest possible number of loadings on the factors approaching zero; and (3) every pair of factors should have the largest possible number of loadings approaching zero on one factor but not the other (Guertin & Bailey, 1970, p. 99). For all program characteristics that had a factor loading of .50 or greater, the loadings that resulted from rotating 9, 10, and 11 factors are presented in Table 2. The complete factor structures for the three rotations are presented in Appendix J.

Table 2

Program Characteristics With Factor Loadings of .50 or Greater in the Three Rotations of the Principal Axes Solution Based Upon N=315

Factors	Characteristics	Rotations 9	10	11
	7	.52	.55	.54
	15	.56	.58	.88
	41	.66	.67	.66
	89	.65	.66	.65
	69	.74	.75	.74
	63	.73	.74	.74
	101	.63	.63	.63
	95	.62	.62	.63
	17	.56	.58	.57
	31	.60	.61	.61
	48	.69	.69	.68
1	75	.79	.78	.78
	79	.76	.76	.76
	96	.71	.70	.70
	99	.67	.67	.67
	1	.55	.57	.56
	6	.54	.55	.56
	13	.65	.65	.65
	44	.70	.69	.69
	72	.74	.73	.73
	29	.76	.75	.76
	28	.74	.73	.73
	73	.65	.64	.64
	51	.70	.67	.68
	37	.59	.58	.59
	61	.56	.55	.56
	25	.77	.77	.76
	16	.81	.80	.80
2	20	.82	.81	.81
	60	.60	.61	.61
	39	.81	.81	.81
	36	.84	.84	.84
	50	.84	.84	.84
	71	.53	.53	.53
	87	.59	.58	.59
	70	.72	.73	.73
	56	.75	.77	.77
	49	.73	.75	.75
3	46	.54	.56	.57
	30	.60	.63	.63
	80	.61	.65	.64
	27	.70	.72	.72
	22	.75	.78	.77
	26	.73	.76	.75

Table 2 (continued)

Factors	Characteristics	Rotations 9	10	11
	76	.71	.71	.72
	78	.54	.55	.52
	102	.54	.53	.54
	74	.70	.70	.70
4	77	.57	.57	.57
	98	.70	.70	.71
	82	.58	.60	.57
	92	.51	.52	.51
	86	.66	.66	.66
	59	.38[a]	.52	.51
	81	.43[a]	.57	.54
	66	.45[a]	.59	.60
5	2	.48[a]	.51	.52
	19	.59	.60	.62
	42	.60	.61	.61
	34	.61	.62	.66
	100	.57	.57	.60
	88	.52	.54	.52
	4	.57	.57	.56
	83	.82	.51	.50
6	40	.76	.76	.77
	12	.72	.73	.75
	35	.72	.73	.75
	11	.50	.51	.49[a]
	85	.65	.71	.70
	90	.64	.68	.66
	103	.60	.58	.60
7	33	.58	.55	.57
	24	.72	.74	.74
	32	.72	.73	.72
	58	.64	.61	.63
	9	.62	.56	.59
	52	.71	.70	.71
	18	.74	.73	.73
	23	.72	.72	.74
8	65	.68	.68	.69
	38	.69	.69	.69
	53	.62	.62	.62
	105	.49[a]	.49[a]	.50
	54	.50	.60	.60
	45	.51	.60	.59
	5	.46[a]	.45[a]	.46[a]
9	64	.62	.62	.63
	84	.61	.66	.66
	14	.65	.59	.59
	8	.59	.51	.51
	62	.50	.45[a]	.45[a]

Table 2 (continued)

Factors	Characteristics	Rotations 9	10	11
10	None			
	10			.56
11	91			.62
	104			.68

[a]The factor loading is included for comparison with the factor structure based upon N=450.

The most evident feature of the data represented in Table 2 was that, regardless of the rotation examined, there was a relatively stable nine-factor structure. For factors 1, 2, 3, 4, and 7, loadings of the variables on the factors were very similar within the three rotations. For factor 5, the rotations of 10 or 11 factors produced a more clearly defined structure. Although not evident in Table 2, from a comparison of factors 5 and 9 for the three rotations in Appendix J, the 10 factor rotation most closely approximated the criteria for simple structure between factors 5 and 9. Also, for factor 6 the 10-factor rotation produced the clearest structure. For factor 8, from Table 2 the rotation of 11 factors was indicated as producing the clearest structure, but from comparison of the loadings of other variables on factors 2, 5, and 8 for the three rotations presented in Appendix J, the 10-factor rotation most closely approximated the criteria for simple structure. Also, for factor 9, from a comparison of the loadings of other variables on factors 5, 6, and 9 in the three rotations in Appendix J, the 10-factor rotation most closely approximated the criteria for simple structure. No variables had loadings of .50 or greater on factor 10 for either the 10- or 11-factor rotations. Three variables had a .50 or greater loading on factor 11 for the 11-factor rotation.

For the three rotations, the rotation of 10 factors produced the clearest common-factor structure. The rotation of 11 factors resulted in the same nine interpretable factors as the 10-factor rotation but with a slightly less clear structure. A trial rotation of 12 factors confirmed this analysis. The 12-factor rotation resulted in the fission of factors 1 and 5 into more specific factors. Therefore, the 10-factor rotation of the principal axes solution for N = 315 was chosen as the rotation most closely approximating the criteria for simple structure and producing the clearest picture of the common-factor structure for the ratings of the 108 program characteristics.

For the principal axes solution based upon N = 450, the latent roots, differences in the latent roots, cumulative variance for which successive axes accounted, and the percentage of common variance for which successive axes accounted are presented in Table 3. Using the differences in the latent roots, the rotation of 10, 11, and 12 factors was indicated. For all the program characteristics that had factor loadings of .50 or greater, the loadings that resulted from the three rotations are presented in Table 4. The complete factor structures for the three rotations are presented in Appendix K.

As in Table 2, the most evident feature of the data presented in Table 4 was that, regardless of the rotation examined, there was a relatively stable nine-factor structure. For factors 1, 2, 3, 7, 8, and 9, the variables with loadings of .50 or greater on the factors were the same for the three rotations. The variables loading .50 or greater on factors 4 and 5 were the same for the three rotations with the exception of one variable that loaded slightly less than .50 (.49) on factor 4 in the 11-factor rotation and one variable that loaded less than .50 (.41)

Table 3
Variance Accounted for by Successive
Principal Axes for N=450

Principal Axes	Eigenvalues	Differences	Cumulative Variance	Percent of Common Variance
1	26.356	--	26.616	36.7
2	7.731	18.625	34.087	47.5
3	5.522	2.209	39.609	54.4
4	3.477	2.045	43.086	60.0
5	3.038	.439	46.124	64.2
6	2.946	.092	49.070	68.3
7	2.561	.385	51.631	71.9
8	2.303	.258	53.934	75.1
9	2.246	.057	56.180	78.2
10	1.922	.324	58.102	80.9
11	1.718	.204	59.820	83.3
12	1.684	.034	61.504	85.6
13	1.514	.170	63.018	87.7
14	1.396	.118	64.414	89.7
15	1.314	.082	65.728	91.5
16	1.123	.191	66.851	93.1
17	1.101	.022	67.952	94.6
18	1.050	.051	69.002	96.1
19	.990	.06	69.992	97.5
20	.920	.07	70.912	98.7
21	.907	.013	71.819	100.0

on factor 5 in the 12-factor rotation. The variables with loadings on factor 6 were the same with the exception of one variable that loaded .50 in the 11-factor rotation but less than .50 in the other rotations. For factor 10, the 10-factor rotation produced no loadings of .50 or greater on factor 10. The 11-factor rotation had two variables loading above .50 on factor 10. These two variables had higher loadings in the 12-factor rotation. Also, one additional variable had a loading on factor 10 of .50 or greater in the 12-factor rotation. No variable had loadings of .50 or greater on factor 11 in the 11-factor and 12-factor rotations. Two variables had loadings of at least .50 on factor 12 in the 12-factor rotation.

Table 4

Program Characteristics With Factor Loadings of .50 or Greater in the Three Rotations of the Principal Axes Solution Based Upon N=450

Factors	Characteristics	Rotations 10	11	12
	7	.51	.52	.53
	15	.56	.57	.58
	41	.65	.65	.65
	89	.64	.64	.64
	69	.73	.73	.73
	63	.74	.75	.75
	101	.61	.59	.58
	95	.59	.58	.58
	17	.58	.58	.59
	31	.63	.64	.65
	48	.71	.70	.70
1	75	.80	.79	.79
	79	.77	.77	.78
	96	.69	.67	.66
	99	.64	.63	.63
	1	.58	.59	.59
	6	.58	.60	.61
	13	.69	.70	.69
	44	.71	.71	.70
	72	.74	.74	.73
	29	.77	.77	.77
	28	.75	.76	.76
	73	.64	.64	.63
	51	.66	.65	.63
	37	.56	.56	.55
	61	.56	.57	.58
	25	.76	.77	.79
	16	.79	.80	.82
	20	.79	.80	.82
2	60	.58	.58	.56
	39	.81	.80	.78
	36	.81	.80	.78
	50	.80	.80	.78
	71	.52	.54	.52
	87	.56	.55	.56
	70	.73	.73	.73
	56	.75	.76	.76
	49	.72	.72	.73
3	46	.55	.57	.56
	30	.58	.59	.66
	80	.60	.61	.63
	27	.72	.73	.74
	22	.76	.78	.79
	26	.74	.75	.76

Table 4 (continued)

Factors	Characteristics	Rotations 10	11	12
4	76	.72	.72	.71
	78	.50	.49[a]	.51
	102	.56	.56	.55
	74	.64	.65	.64
	77	.57	.60	.61
	98	.73	.73	.73
	82	.55	.54	.57
	92	.51	.53	.54
	86	.61	.62	.62
5	59	.37[a]	.37[a]	.26[a]
	81	.41[a]	.42[a]	.32[a]
	66	.50	.50	.41[a]
	2	.59	.59	.61
	19	.68	.68	.69
	42	.66	.66	.66
	34	.71	.71	.72
	100	.65	.64	.65
6	88	.49[a]	.50	.47[a]
	4	.59	.60	.54
	83	.53	.55	.51
	40	.77	.78	.82
	12	.73	.74	.80
	35	.73	.74	.79
	11	.48[a]	.49[a]	.46[a]
7	85	.62	.60	.65
	90	.61	.60	.64
	103	.56	.61	.59
	33	.53	.55	.53
	24	.71	.70	.72
	32	.71	.70	.72
	58	.63	.66	.63
	9	.61	.64	.59
8	52	.72	.72	.72
	18	.75	.75	.75
	23	.77	.77	.77
	65	.73	.73	.73
	38	.72	.72	.72
	53	.62	.61	.61
	105	.47[a]	.47[a]	.47[a]
9	54	.55	.57	.60
	45	.58	.60	.64
	5	.51	.52	.51
	64	.64	.64	.62
	84	.64	.64	.66
	14	.64	.62	.63
	8	.61	.60	.60
	62	.50	.50	.50

Table 4 (continued)

Factors	Characteristics	Rotations 10	11	12
10[b]	10	.28[a]	.46[a]	.59[a]
	91	.36[a]	.60	.70
	104	.41[a]	.67	.79
11[c]	none			
12	94			.51
	54			.53

[a]The factor loading is included for comparison with the factor structure based upon N=315.

[b]This factor most closely corresponds with factor 11 in the 11-factor rotation based upon N=315.

[c]This factor most closely corresponds with factor 10 in the 10-factor rotation based upon N=315.

Although not entirely evident from the data presented in Table 4, it was evident from the entire factor structure presented in Appendix K that the rotation of 10 factors produced a factor structure more closely approximating the criteria for simple structure. The 11-factor rotation resulted in the beginning of fission for factor 1 (factor 11). The 12-factor rotation clarified the structure for the specific factor (factor 11), continued the fission of factor 1, and resulted in the fission of factor 5, producing another specific factor (factor 12). Therefore, for the analysis based upon N = 450, the factor structure that resulted from the rotation of 10 factors was selected as the best representation of the common-factor structure for the ratings of the 108 program characteristics based upon N = 450.

To determine the intercorrelation of the factors for both factor structures, the two principal axes solutions (N = 315 and N = 450) were submitted to an oblique rotation using the direct oblimin rotation procedure as described by Jennrich and Sampson (1966). The correlation

coefficients for the intercorrelation of the factors for both N = 315 and N = 450 are presented in Table 5. Since the factors were essentially uncorrelated with no correlation coefficient exceeding .42, then the orthogonal rotation was accepted as producing the best solution for the common-factor structure.

The next task was to determine whether the 10-factor structure from the analysis based upon N = 315 was congruent with the 10-factor structure from the analysis based upon N = 450. The coefficients of congruence between comparable factors in the two factor structures are presented in Table 6. Since all the coefficients were at least .90, the

Table 5

Intercorrelations of the Factors for the 10-Factor Rotation of the Principal Axes Solutions for N=315 and N=450

		Factors									
		1	2	3	4	5	6	7	8	9	10
N=315	1	1.00									
	2	.37	1.00								
	3	.17	.14	1.00							
	4	.28	.41	.06	1.00						
	5	.18	.24	.13	.24	1.00					
	6	.16	.33	.19	.24	.24	1.00				
	7	.20	.25	.30	.17	.15	.12	1.00			
	8	.23	.25	.18	.21	.23	.25	.21	1.00		
	9	.05	.18	.22	.11	.15	.13	.27	.23	1.00	
	10	.05	.08	.08	-.02	.04	.02	.03	.07	.01	1.00
N=450	1	1.00									
	2	.19	1.00								
	3	.16	.28	1.00							
	4	.18	.21	.18	1.00						
	5	.13	.27	.22	.18	1.00					
	6	.32	.14	.09	.27	.14	1.00				
	7	.22	.30	.23	.28	.29	.23	1.00			
	8	.38	.23	.13	.28	.24	.42	.29	1.00		
	9	.15	.07	.15	.22	.14	.24	.22	.28	1.00	
	10	.03	.04	.05	.03	-.02	-.01	.01	.02	.05	1.00

Table 6

Coefficients of Congruence Between Comparable Factors for the 10-Factor Structures for N=315 and N=450

Factors	1	2	3	4	5	6	7	8	9	10
Coefficients	.98	.97	.97	.96	.94	.96	.96	.95	.95	.93

factor structures were considered congruent. Therefore, the factor structure based upon N = 450 was taken as the factor structure best representing the common factor space for the ratings of the 108 program characteristics.

Interpretation of the Factors

In the selected rotated 10-factor structure, there were nine interpretable factors. The 10-factor structure represented the common-factor space of the ratings of the 108 program characteristics. The nine interpretable factors represented nine common dimensions underlying these ratings. Each of these common dimensions is defined in the following discussion.

The program characteristics with loadings of .50 or greater on factor 1 are listed in Table 7. These program characteristics concerned total cost of a program, costs of various aspects of a program, usage of equipment and space, and number of support staff. In addition to total cost, other costs included cost of instructional personnel, program administration, support services, materials, equipment maintenance, and space utilized. For the majority of these program characteristics, the administrators indicated that the information was desired per total program, per number of program full-time equivalent (FTE) students, and per program unduplicated headcount of students.

Table 7

Program Characteristics With .50 or Greater Loadings on Factor 1

Number	Loading	Program Characteristics
1	.58	Total cost of a program
7	.51	Total cost of a program per FTE
17	.58	Total cost of program per unduplicated headcount
6	.69	Cost of instructional personnel per total program
15	.56	Cost of instructional personnel per program FTE
31	.63	Cost of instructional personnel per program unduplicated headcount
28	.75	Cost of program administration per total program
63	.74	Cost of program administration per program FTE
79	.77	Cost of program administration per program unduplicated headcount
29	.77	Cost of support services per total program
69	.73	Cost of support services per program FTE
75	.80	Cost of support services per program unduplicated headcount
37	.56	Number of support staff per total program
95	.59	Number of support staff per program FTE
99	.64	Number of support staff per program unduplicated headcount
41	.65	Cost of materials per program FTE
48	.71	Cost of materials per program unduplicated headcount
51	.66	Equipment utilization per total program
101	.61	Equipment utilization per program FTE
96	.69	Equipment utilization per program unduplicated headcount
44	.71	Cost of equipment maintenance per total program
89	.64	Cost of equipment maintenance per program FTE
73	.64	Space utilization per total program
72	.74	Cost of space utilized per total program

Based upon the content of these program characteristics, factor 1 was interpreted as involving resources used in a program. Fiscal, physical (equipment and space), and human resources (support staff) were included. Factor 1 was identified as one common dimension underlying the ratings of the 108 program characteristics and was labeled the "Resources Usage" dimension.

The program characteristics with loadings of .50 or greater on factor 2 are listed in Table 8. These program characteristics concerned ratings of program support services and student services by students enrolled in a program and students who have completed a program. The ratings of student services included ratings of the usefulness, accessibility, and ease of use of the services. Based upon the content of these program characteristics, factor 2 was interpreted as involving student ratings of support services, including student services. Factor 2 was identified as another common dimension underlying the ratings of the 108 program characteristics and was labeled the "Student Ratings of Support Services" dimension.

The program characteristics with loadings of .50 or greater on factor 3 are listed in Table 9. These program characteristics involved

Table 8

Program Characteristics With .50 or Greater Loadings on Factor 2

Number	Loading	Program Characteristics
61	.56	Ratings of support services by currently enrolled students
60	.58	Ratings of support services by program completers
25	.76	Ratings of usefulness of student services by currently enrolled students
39	.81	Ratings of usefulness of student services by program completers
16	.79	Ratings of accessibility of student services by currently enrolled students
36	.81	Ratings of accessibility of student services by program completers
20	.79	Ratings of ease of use of student services by currently enrolled students
50	.80	Ratings of ease of use of student services by program completers

Table 9

Program Characteristics With .50 or Greater Loadings on Factor 3

Number	Loading	Program Characteristics
46	.55	Number or percent of full-time faculty/staff by a productivity ratio
71	.52	Number or percent of part-time faculty/staff by a productivity ratio
30	.58	Number or percent of full-time faculty/staff by number of course hours taught per term
87	.56	Number or percent of part-time faculty/staff by number of course hours taught per term
27	.72	Number or percent of full-time faculty/staff by number of student contact hours per term
70	.73	Number or percent of part-time faculty/staff by number of student contact hours per term
22	.76	Number or percent of full-time faculty/staff by number of students per term
56	.75	Number or percent of part-time faculty/staff by number of students per term
26	.74	Number or percent of full-time faculty/staff by average class size
49	.72	Number or percent of part-time faculty/staff by average class size
80	.60	Number or percent of full-time faculty/staff by number of FTE students per term

information about full-time and part-time faculty or staff in a program. The information included the number or percent of full-time and part-time faculty or staff by (1) their rating on some productivity ratio, (2) the number of course hours they taught per term, (3) the number of student contact hours they had per term, (4) the number of students they had per term, and (5) their average class size. Additionally, but for full-time faculty or staff only, the information included the number of FTE students they taught per term. Based upon the content of these program characteristics, factor 3 was interpreted as involving information on the productivity of faculty or staff in a program. Factor 3 was identified as

another common dimension underlying the ratings of the 108 program characteristics and was labeled the "Faculty/Staff Instructional Productivity" dimension.

The program characteristics with loadings of .50 or greater on factor 4 are listed in Table 10. These program characteristics involved information about students entering a program and students currently enrolled in a program. For both entering and currently enrolled students, the information included the number or percent of students by major area of study, by type of handicap, and by types of developmental or remedial assistance desired. For entering students only, the information included the number or percent of students by level of previous academic

Table 10

Program Characteristics With .50 or Greater Loadings on Factor 4

Number	Loadings	Program Characteristics
102	.56	Number or percent of entering students by level of previous academic achievement
77	.57	Number or percent of entering students by academic skills level as measured by local instruments
78	.50	Number or percent of entering students by major area of study
82	.55	Number or percent of currently enrolled students by major area of study
76	.72	Number or percent of entering students by type of handicap
98	.73	Number or percent of currently enrolled students by type of handicap
74	.64	Number or percent of entering students by types of developmental or remedial assistance desired
86	.61	Number or percent of currently enrolled students by types of developmental or remedial assistance desired
92	.51	Number or percent of currently enrolled students by number of hours with failing grade

achievement and by academic skills level as measured by local instruments. For currently enrolled students only, the information included the number or percent of students by number of hours with failing grade. Based upon the content of these program characteristics, factor 4 was interpreted as involving the identification of any physical or cognitive needs of students relevant to their performance in their selected programs. Factor 4 was identified as another common dimension underlying the ratings of the 108 program characteristics and was labeled the "Physical and Academic Skills Needs Assessment Enrolled Students" dimension.

The program characteristics with a loading of .50 or greater on factor 5 are listed in Table 11. These program characteristics involved ratings of various aspects of a program by students who have completed a program or who are currently enrolled in a program. The aspects of a program to be rated by program completers included program staff, program facilities and equipment, program instructional strategies, program administration, and program curriculum. Also included were ratings of a

Table 11

Program Characteristics With .50 or Greater Loadings on Factor 5

Number	Loadings	Program Characteristics
34	.71	Ratings of program staff by program completers
19	.68	Ratings of program facilities/equipment by program completers
42	.66	Ratings of program instructional strategies by program completers
100	.65	Ratings of program administrators by program completers
2	.59	Ratings of program curriculum by program completers
66	.50	Ratings of program staff by currently enrolled students

program's staff by currently enrolled students. Based upon the content of these program characteristics, factor 5 was interpreted as involving student ratings, primarily ratings by program completers, of various aspects of a program. Factor 5 was identified as another common dimension underlying the ratings of the 108 program characteristics and was labeled the "Student Ratings of Program" dimension.

The program characteristics with loadings of .50 or greater on factor 6 are listed in Table 12. These program characteristics concerned information on the quantity of students completing a program and the average time taken for completion, the number or percent of those completing a program who take state board or licensure exams, the number passing those exams, and the type of license, certificate, or registration received. Based upon the content of these program characteristics, factor 6 was interpreted as involving measures of the quantitative output of a program and certain student follow-up information. Factor 6 was identified as another common dimension underlying the ratings of the 108

Table 12

Program Characteristics With .50 or Greater Loadings on Factor 6

Number	Loadings	Program Characteristics
4	.59	Number or percent of students completing a program
83	.53	Number or percent of program completers by average time taken for completion of a program
40	.77	Number or percent of program completers taking state board or licensure exams
12	.73	Number or percent of program completers passing state board or licensure exams
35	.73	Number or percent of program completers by type of license, certificate, or registration received

program characteristics and was labeled the "Program Student Output" dimension.

The program characteristics with loadings of .50 or greater on factor 7 are listed in Table 13. These program characteristics concerned various attributes of both the full-time and part-time faculty or staff in a program. The attributes included degrees held, total years taught or served, years taught or served in a specific program, and type of certification or rank held. Based upon the content of these program characteristics, factor 7 was interpreted as involving indicators of the level of preparedness of faculty or staff serving in a program. Factor 7 was identified as another common dimension underlying the ratings of the 108 program characteristics and was labeled the "Faculty/Staff Preparedness" dimension.

Table 13

Program Characteristics With .50 or Greater Loadings on Factor 7

Number	Loadings	Program Characteristics
9	.61	Number or percent of full-time faculty/staff by degrees held
33	.51	Number or percent of part-time faculty/staff by degrees held
24	.71	Number or percent of full-time faculty/staff by years taught or served
85	.62	Number or percent of part-time faculty/staff by years taught or served
32	.71	Number or percent of full-time faculty/staff by length of service in a program
90	.61	Number or percent of part-time faculty/staff by length of service in a program
58	.66	Number or percent of full-time faculty/staff by certification or rank held
103	.57	Number or percent of part-time faculty/staff by certification or rank held

The program characteristics with loadings of .50 or greater on factor 8 are listed in Table 14. These program characteristics involved ratings of various aspects of a program by a program's faculty or staff. The aspects of a program to be rated included instructional strategies, facilities and equipment, staff, curriculum, administration, and support services. Based upon the content of these program characteristics, factor 8 was interpreted as involving ratings of a program by a program's faculty or staff. Factor 8 was identified as another common dimension underlying the ratings of the 108 program characteristics and was labeled the "Faculty/Staff Program Ratings" dimension.

The program characteristics with loadings of .50 or greater on factor 9 are listed in Table 15. These program characteristics included the number or types of changes in a program as a result of program evaluations or accreditation studies; ratings of a program by certification boards or accreditation agencies; level of demand for a program in the college's service area, by students, and in the college's state; and clearly stated objectives for a program. Based upon the content of

Table 14

Program Characteristics With .50 or Greater Loadings on Factor 8

Number	Loadings	Program Characteristics
23	.77	Ratings of program instructional strategies by faculty/staff
18	.75	Ratings of program facilities/equipment by faculty/staff
65	.73	Ratings of program staff by faculty/staff
52	.72	Ratings of a program curriculum by faculty/staff
38	.72	Ratings of program administration by faculty/staff
53	.62	Ratings of support services by faculty/staff

Table 15

Program Characteristics With .50 or Greater Loadings on Factor 9

Number	Loadings	Program Characteristics
64	.64	Number/types of changes as a result of program evaluations
84	.64	Number/types of changes as a result of accreditation studies
54	.55	Ratings by certification boards
45	.58	Ratings by accreditation agencies
8	.61	Level of demand for program or service in a college's service area
14	.64	Level of demand for program or service by students
62	.50	Level of demand for program or service in college's state
5	.51	Clearly stated program objectives

these program characteristics, factor 9 was interpreted as involving the responsiveness of a program to program evaluations, certification boards, accreditation agencies, the community it serves, the students it serves, and the state it serves. Although not an object of a program's responsiveness, program objectives clearly related to assessing that responsiveness. Factor 9 was identified as another common dimension underlying the ratings of the 108 program characteristics and was labeled the "Program Responsiveness" dimension.

The factor analysis has resulted in the identification of a 10-factor structure with nine interpretable factors that remained relatively stable across several rotations and for the two groups of respondents (N = 315 and N = 450). The identified factor structure has been interpreted as representing the underlying dimensions common to the ratings of the 108 program characteristics. Using the content of the program characteristics that loaded .50 or greater on the factors, each of the

nine dimensions has been described and labeled. The labels have been created to reflect the content of the program characteristics loading .50 or greater on the factor representing a dimension. The following labels have been created for the nine dimensions:

Resources Usage
Student Ratings of Support Services
Faculty/Staff Instructional Productivity
Physical and Academic Skills Needs Assessment of Enrolled Students
Student Ratings of Program
Program Student Output
Faculty/Staff Preparedness
Faculty/Staff Program Ratings
Program Responsiveness.

In accordance with the evaluation theory developed by Stufflebeam et al. (1971), the program characteristics that have been identified as included in these dimensions were delineated in interaction with the administrators making program quality-evaluation decisions in Florida public community/junior colleges. These program characteristics were rated by the administrators as the ones most highly useful in making program quality-evaluation decisions. According to the results of this study, the data represented by these program characteristics are those data that should be collected, organized, and analyzed for the purpose of providing information useful to the administrators in program quality-evaluation decision making in Florida public community/junior colleges.

The results of the factor analysis performed in this study have demonstrated that there are nine common dimensions that should be used to organize those data for presentation of information to administrators involved in program quality-evaluation decision making. As developed in the theoretical rationale for this study, based on the theory of evaluation developed by Stufflebeam et al. (1971), the items of information

identified reflected those aspects of the aggregate value system of these administrators that are relevant to program quality-evaluation decision making and the underlying dimensions of those items reflect the dimensions of the aggregate value system that are relevant to this decision situation. Therefore, the utilization of the nine identified common dimensions to organize the relevant data should result in an information format that these administrators should find most useful, since the format should approximate the dimensions of those aspects of the aggregate value system that are common to these administrators and that are being used in making program quality-evaluation decisions. Any individual administrator should find such a format more or less useful to the degree that the relevant dimensions of his value system are reflected in the aggregate value system represented in the nine dimensions.

It should be noted that these nine dimensions are dimensions representing the parameters of the information an administrator is most likely to find useful in making program quality-evaluation decisions. It should be understood that the information these dimensions reflect might be positively or negatively valued by an administrator and in varying degrees in relation to assessing a program. Since quality is a value judgment and not an attribute or characteristic of a program, these nine common dimensions are the dimensions of an aggregate value system used by administrators in making program quality-evaluation decisions. They should not be interpreted as dimensions of quality.

The identification of these nine dimensions completed the analysis required for resolving the first aspect of the problem with which this study was concerned: to determine any underlying dimensions of the multiple items of information rated as highly useful in program quality-

evaluation decision making by administrators involved in such decision making in Florida public community/junior colleges. In the next section of this chapter, the results are presented of a comparison of the mean factor scores of the administrators classified first by program areas in relation to which they had major administrative responsibilities and then by administrative areas as reflected in their position titles. The following results reflect an attempt to determine any significant differences between program areas or between administrative areas in emphasis on any of the nine dimensions in order to refine the description for formatting by program or administrative area the information included in these dimensions.

Factor Score Comparisons

Program Areas

Using the selected factor structure, factor scores were computed for the 450 respondents using the regression method in the SAS factor procedure and the SAS score procedure. Mean factor scores were calculated for the respondents grouped according to program area. Included in this analysis were those respondents whose position title indicated that they had major responsibility in one of the five program areas common to most community colleges in Florida: the Advanced and Professional, Occupational, Developmental, Community Instructional Services, and Student Services program areas. Not all the administrators who participated in this study had major responsibility in a specific program area. The position codes used to classify the administrators included in each program area are listed in Appendix A. Position codes, associated titles, and frequency of the position codes are in Appendix D. The program areas, the number of respondents classified in each program area, and the percentage of all respondents that this represents are given in Table 16.

Table 16

Number of Respondents Per Program Area and Corresponding Percentages of All Respondents (N=450)

Program Areas	Number of Respondents	Percentage of N
Advanced and Professional	65	14.4
Occupational	83	14.4
Developmental	5	1.1
Community Instructional Services	21	4.7
Student Services	88	19.6
TOTAL	262	58.2

Although the number of administrators with primary responsibility in the Developmental Program Area was small (N = 5), they represented five different colleges. According to the list of administrators with responsibility for compensatory/developmental education in the 1981-82 Directory of Florida Community Colleges (Division of Community Colleges, 1981a, p. 71), there were very few position titles reflecting primary responsibility in this program area.

The mean factor scores and standard deviations for the program areas are presented in Table 17. It should be recalled that all of the program characteristics included in this study were rated as highly useful in program quality-evaluation decision making. Therefore, the factor scores indicated the relative emphasis placed upon the program characteristics with relatively greater loadings on a factor by the administrators classified in a program area. Since the rating scale was 1 (program characteristics

Table 17

Mean Factor Scores and Standard Deviations
for Respondents Grouped by Program Area

Factors		Program Areas				
		Advanced and Professional (N=65)	Occupational (N=83)	Student Services (N=88)	Developmental (N=5)	Community Instructional Services (N=21)
1	Mean	-0.038	0.081	-0.044	-0.072	0.487
	S.D.	0.991	0.991	0.987	1.675	0.837
2	Mean	0.177	0.219	-0.480	-0.141	0.435
	S.D.	0.979	1.096	0.787	1.195	1.314
3	Mean	-0.033	-0.222	0.124	-0.341	0.231
	S.D.	0.783	0.901	0.977	0.958	1.126
4	Mean	-0.133	-0.060	-0.109	0.571	0.952
	S.D.	0.842	0.936	0.898	0.750	1.266
5	Mean	0.032	0.143	0.092	-0.435	0.219
	S.D.	0.924	0.977	1.013	0.972	0.817
6	Mean	0.046	-0.579	0.042	1.619	0.340
	S.D.	0.877	0.832	0.894	1.334	1.092
7	Mean	-0.390	0.021	-0.112	-0.024	0.387
	S.D.	0.740	1.024	0.898	0.569	1.009
8	Mean	-0.054	-0.149	0.410	-0.350	-0.301
	S.D.	0.910	0.893	1.049	0.877	0.798
9	Mean	0.128	-0.142	0.025	0.500	0.061
	S.D.	1.059	0.938	0.923	1.037	1.046

essential to quality-evaluation decision making) to 4 (program characteristics of little or no use in quality-evaluation decision making), a low factor score indicated that administrators included in the program area rated the program characteristics with relatively greater loadings on a factor as relatively more highly useful in program quality-evaluation decision making and a high factor score indicated that they rated them relatively less highly useful.

The results of testing for significant differences in mean factor scores between program areas for all factors are presented in Appendix L. As indicated in the description of the methodology for this study, an analysis of variance prior to performing the t tests was inappropriate due to unequal variances among some of the program area classifications. The Bonferroni correction for multiple t tests was applied to the obtained t statistics.

For factors 1, 3, and 9, there were no significant differences in mean factor scores between any of the program areas (Appendix L). For factor 1, the Resources Usage dimension, the mean factor scores ranged from -.072 for the Developmental Program Area to .487 for Community Instructional Services (Table 17). For factor 3, the Faculty/Staff Instructional Productivity dimension, the mean factor scores ranged from -.341 for the Developmental Program Area to .231 for Community Instructional Services. For factor 9, the Program Responsiveness dimension, the mean factor scores ranged from -.142 for the Occupational Program Area to .500 for the Developmental Program Area. These results indicated that the administrators classified into the five program areas did not differ significantly in their emphasis on these three dimensions: Resources Usage, Faculty/Staff Instructional Productivity, and Program Responsiveness.

For factors 2 and 8, there were significant differences in mean factor scores between Student Services and all other program areas except the Developmental Program Area (Appendix L). For factor 2, the Student Ratings of Support Services dimension, the mean factor scores ranged from -.480 for Student Services to .487 for Community Instructional Services (Table 17). For factor 8, the Faculty/Staff Program Ratings dimension, the mean factor scores ranged from .410 for Student Services to -.350 for the Developmental Program Area (Table 17). These results indicated that the administrators classified in Student Services emphasized the Student Ratings of Support Services dimension significantly more than did all other program areas except the Developmental Program Area and emphasized the Faculty/Staff Program Ratings dimension significantly less than did all other program areas except the Developmental Program Area. Also, the results indicated that the other program areas did not differ significantly in their emphasis on these dimensions. It should be recalled that the number of administrators classified in the Developmental Program Area was relatively small (N = 5) which influenced the tests for significant differences in mean factor scores.

For factor 4, there were significant differences in mean factor scores between Community Instructional Services and all other program areas except the Developmental Program Area (Appendix L). For factor 4, the Physical and Academic Skills Needs Assessment of Enrolled Students dimension, the mean factor scores ranged from -.133 for the Advanced and Professional Program Area to .952 for Community Instructional Services (Table 17). These results indicated that the administrators classified in Community Instructional Services emphasized the Physical and Academic Skills Needs Assessment of Enrolled Students dimension significantly

less than did all other program areas except the Developmental Program Area. Also, the results indicated that the other program areas did not differ significantly in their emphasis on this dimension.

There were significant differences in mean factor scores between the Occupational Program Area and the Advanced and Professional and the Student Services program areas on factor 5 (Appendix L). For this factor, the Student Ratings of Program dimension, the mean factor scores ranged from -.435 for the Developmental Program Area to .219 for Community Instructional Services (Table 17). The mean factor score for the Occupational Program Area was .143 (Table 17). These results indicated that the administrators classified in the Occupational Program Area emphasized the Student Ratings of Program dimension significantly less than did the Advanced and Professional or the Student Services program areas. Also, the results indicated that the Occupational Program Area did not differ significantly from Community Instructional Services and the Developmental Program Area in emphasis on this dimension and that program areas other than the Occupational Program Area did not differ significantly in their emphasis on this dimension.

For factor 6, there were significant differences in mean factor scores between the Developmental Program Area and all other program areas except Community Instructional Services (Appendix L). For this factor, the Program Student Output dimension, the mean factor scores ranged from -.579 for the Occupational Program Area to 1.619 for the Developmental Program Area (Table 17). These results indicated that the administrators classified in the Developmental Program Area emphasized the Program Student Output dimension significantly less than did all other program areas except Community Instructional Services. Also, the results

indicated that the other program areas did not differ significantly in their emphasis on this dimension.

For the remaining factor, factor 7, there were significant differences in the mean factor scores between the Advanced and Professional Program Area and the Occupational and Community Instructional Services program areas (Appendix L). For this factor, the Faculty/Staff Preparedness dimension, the mean factor scores ranged from -.390 for the Advanced and Professional Program Area to .387 for Community Instructional Services (Table 17). These results indicated that the administrators classified in the Advanced and Professional Program Area emphasized the Faculty/Staff Preparedness dimension significantly more than did the Occupational and the Community Instructional Services program areas. Also, the results indicated that the Advanced and Professional Program Area did not differ significantly from the other two program areas in their emphasis on this dimension and that the program areas other than the Advanced and Professional Program Area did not differ significantly in their emphasis on this dimension.

As indicated in the preceding section of this chapter, the utilization of the nine identified common dimensions to organize the 108 program characteristics identified as most useful in program quality-evaluation decision making should result in increasing the probability that the format of the presented information will be perceived as credible and useful by the administrator involved in the decision situation. Examination of the differences in mean factor scores for the five program areas was done to determine if there were any statistically significant differences that might be useful in tailoring by program area the format of information presented to administrators in the five program areas for use in program quality-evaluation decision making.

The results presented in this section indicated that the administrators classified into the five program areas did not differ significantly in their emphasis on three dimensions: Resources Usage, Faculty/Staff Instructional Productivity, and Program Responsiveness. For the Student Ratings of Support Services dimension, the results indicated that Student Services emphasized this dimension significantly more than did all other program areas except the Developmental Program Area. Community Instructional Services emphasized the Physical and Academic Skills Needs Assessment of Enrolled Students dimension significantly less than did all other program areas except the Developmental Program Area. The Student Ratings of Program dimension was emphasized significantly less by the Occupational Program Area than by the Advanced and Professional and Student Services program areas. The Developmental Program Area placed significantly less emphasis on the Program Student Output dimension than did all other program areas except Community Instructional Services. For the Faculty/Staff Preparedness dimension, the Advanced and Professional Program Area emphasized this dimension significantly more than did the Occupational and Community Instructional Services program areas. The Faculty/Staff Program Ratings dimension received significantly less emphasis by Student Services than by all other program areas except the Developmental Program Area.

These results should be useful in tailoring by program area the organization of information for presentation to administrators involved in quality-evaluation decision making in a specific program area. For example, the results indicated that the information included in the Faculty/Staff Preparedness dimension should be emphasized when presenting information to administrators with major responsibilities in the Advanced

and Professional Program Area to increase the probability that administrators in that program area will find the information credible and useful in program quality-evaluation decision making. The nature of this emphasis, although not an objective of this study, might include the presentation of more information or more detailed information or some type of weighting of the information related to this dimension. Similarly, these results may be used to tailor the presentation of information for program quality-evaluation decision making to administrators in other specific program areas.

The results presented in this section applied only to significant differences among the mean factor scores for administrators classified within the specified program areas. In the next section of this chapter, the results are presented for comparison of the mean factor scores between administrators classified within six administrative areas as defined in Chapter III.

Administrative Areas

Using the selected factor structure, mean factor scores were calculated for the administrators classified within the six administrative areas defined in Chapter III. The six administrative areas were General Administration, Academic Affairs, Student Affairs, Community Instructional Services, Business Affairs, and Presidents. A description of the administrative areas and the position codes used to classify the administrators included in each administrative area are given in Appendix A. The administrative areas, the number of respondents in each administrative area, and the percentage of all respondents that this represents are given in Table 18.

Table 18

Number of Respondents Per Administrative Area and Corresponding Percentages of All Respondents (N=450)

Administrative Areas	Number of Respondents	Percentage of N
General Administration	89	19.8
Academic Affairs	210	46.7
Student Affairs	88	19.6
Community Instructional Services	21	4.7
Business Affairs	29	6.4
Presidents	13	2.9
TOTAL	450	100.1

It should be understood that the administrators included in the analysis by program areas were included in this analysis also. The analysis by program areas included only those administrators who were identified as having major responsibility in a specific program area. For the administrative areas of Student Affairs and Community Instructional Services, the administrators included in the analysis by administrative areas were the same as for the corresponding program areas. The administrative area of Academic Affairs included the same administrators included in the Advanced and Professional, Occupational, and Developmental program areas plus administrators who had general responsibilities in academic affairs, such as deans of academic affairs and directors of instructional resources. None of the administrators in the administrative areas of General Administration, Business Affairs, or Presidents were included in the analysis by program area.

The mean factor scores and standard deviations for the administrative areas are presented in Table 19. It should be recalled that a low factor score indicated that administrators included in the administrative area rated the program characteristics with relatively greater loadings on a factor as relatively more highly useful in program quality-evaluation decision making and that a high factor score indicated that they rated them relatively less highly useful.

The results of testing for significant differences in mean factor scores between administrative areas for all factors are presented in Appendix M. As indicated in the discussion of the results for the analysis by program areas, an analysis of variance prior to performing the t tests was inappropriate due to unequal variances among some of the administrative area classifications. The Bonferroni correction for multiple t tests was applied to the obtained t statistics.

For factors 3, 5, 6, 7, and 9, there were no significant differences in mean factor scores between any of the administrative areas (Appendix M). For factor 3, the Faculty/Staff Instructional Productivity dimension, the mean factor scores ranged from -.093 for the Presidents to .231 for Community Instructional Services (Table 19). The mean factor scores on factor 5, the Student Ratings of Program dimension, ranged from -.090 for the Presidents to .219 for Community Instructional Services (Table 19). For factor 6, the Program Student Output dimension, the mean factor scores ranged from -.418 for the Presidents to .340 for Community Instructional Services (Table 19). The mean factor scores on factor 7, the Faculty/Staff Preparedness dimension, ranged from -.112 for Student Services to .600 for the Presidents (Table 19). For factor 9, the Program Responsiveness dimension, the factor scores ranged from -.170 for General

Table 19

Mean Factor Scores and Standard Deviations
for Respondents Grouped by Administrative Area

Factors		Administrative Areas					
		General Administration (N=89)	Academic Affairs (N=210)	Student Affairs (N=88)	Community Instructional Services (N=21)	Business Affairs (N=29)	Presidents (N=13)
1	Mean	.001	.016	-0.044	.487	-0.178	-0.356
	S.D.	1.091	.974	.987	.837	.798	.902
2	Mean	-0.004	.142	-0.480	.435	.236	-0.241
	S.D.	.839	1.025	.787	1.314	.898	.595
3	Mean	.058	-0.090	.124	.231	-0.026	-0.093
	S.D.	.995	.897	.977	1.126	1.284	.623
4	Mean	-0.050	-0.079	-0.108	.952	.230	.299
	S.D.	.905	.899	.898	1.266	1.106	.943
5	Mean	.058	-0.082	.025	.219	.095	-0.090
	S.D.	.995	.878	.923	.817	1.083	.967
6	Mean	-0.093	.006	.042	.340	.055	-0.418
	S.D.	.865	.983	.894	1.082	1.231	.571
7	Mean	-0.037	-0.046	-0.113	.387	.247	.600
	S.D.	.916	.954	.898	1.009	1.136	.976
8	Mean	-0.001	-0.154	.410	-0.301	.268	-0.396
	S.D.	.880	.889	1.049	.799	1.050	.929
9	Mean	-0.170	-0.012	.025	.061	.435	.097
	S.D.	.733	.987	.923	1.046	1.137	.886

Administration to .435 for Business Affairs (Table 19). These results indicated that the administrators classified into the six administrative areas did not differ significantly in their emphasis on these five dimensions: Faculty/Staff Instructional Productivity, Student Ratings of Program, Program Student Output, Faculty/Staff Preparedness, and Program Responsiveness.

Similar to the results for the program areas, there were significant differences in mean factor scores on factor 2 between Student Affairs and all of the other administrative areas except the Presidents (Appendix M). Also, there were significant differences in mean factor scores on factor 8 between Student Affairs and the administrative areas of Academic Affairs and Community Instructional Services (Appendix M). For factor 2, the Student Ratings of Support Services dimension, the mean factor scores ranged from -.480 for Student Affairs to .435 for Community Instructional Services (Table 19). For the administrative areas of General Administration, Academic Affairs, and Business Affairs, the mean factor scores were -.004, .142, and .236, respectively (Table 19). For factor 8, the Faculty/Staff Program Ratings dimension, the mean factor scores ranged from -.396 for the Presidents to .410 for Student Affairs (Table 19). For the administrative areas of Academic Affairs and Community Instructional Services, the mean factor scores were -.154 and -.301, respectively (Table 19). These results indicated that administrators classified into the administrative area of Student Affairs gave significantly more emphasis to the Student Ratings of Support Services dimension than did all the other administrative areas except the Presidents and significantly less emphasis to the Faculty/Staff Program Ratings dimension than did two of the other administrative areas. Also, the results indicated that Student Affairs

did not differ significantly from the Presidents in emphasis on the Student Ratings of Support Services dimension and did not differ significantly from either the Presidents or General Administration or Business Affairs on the Faculty/Staff Program Ratings dimension. Also, the results indicated that the administrative areas other than Student Affairs did not differ significantly in emphasis on these two dimensions.

For factor 1, there was a significant difference in the mean factor score between the administrative areas of Community Instructional Services and Business Affairs (Appendix M). Also, similar to the results for the program areas, there were significant differences in mean factor scores on factor 4 between the administrative area of Community Instructional Services and the administrative areas of General Administration, Academic Affairs, and Student Affairs (Appendix M). For factor 1, the Resources Usage dimension, the mean factor scores ranged from -.356 for the Presidents to .487 for Community Instructional Services (Table 19). The mean factor score for Business Affairs was -.178 (Table 19). The mean factor scores on factor 4, the Physical and Academic Skills Needs Assessment of Enrolled Students dimension, ranged from -.109 for Student Affairs to .952 for Community Instructional Services (Table 19). For the administrative areas of General Administration and Academic Affairs, the mean factor scores were .050 and -.079, respectively (Table 19). These results indicated that administrators classified into the administrative area of Community Instructional Services gave significantly less emphasis to the Resources Usage dimension than did administrators classified into the administrative area of Business Affairs and significantly less emphasis to the Physical and Academic Skills Needs Assessment of Enrolled Students dimension than did administrators classified into the administrative areas

of General Administration, Academic Affairs, and Student Affairs. The results indicated that administrators within Community Instructional Services did not differ significantly from any of the administrative areas other than Business Affairs in emphasis on the Resources Usage dimension and did not differ significantly from Business Affairs or the Presidents in emphasis on the Physical and Academic Skills Needs Assessment of Enrolled Students dimension. Also, the results indicated that administrators within administrative areas other than Community Instructional Services did not differ significantly in emphasis on these dimensions.

As indicated previously in this chapter, the utilization of the nine identified common dimensions to organize the 108 program characteristics identified as most useful in program quality-evalution decision making should result in increasing the probability that the format of the presented information will be perceived as credible and useful by the administrator involved in the decision situation. Examination of the differences in mean factor scores for the six administrative areas was done to determine whether there were any statistically significant differences that might be useful in tailoring by administrative area the format of information presented to administrators in the six administrative areas for use in program quality-evaluation decision making.

The results presented in this section indicated that the administrators classified into the six administrative areas did not differ significantly in their emphasis on five dimensions: Faculty/Staff Instructional Productivity, Student Ratings of Program, Program Student Output, Faculty/Staff Preparedness, and Program Responsiveness. For the Resources Usage dimension, the results indicated that Business Affairs emphasized this

dimension significantly more than did Community Instructional Services. Student Affairs emphasized the Student Ratings of Support Services dimension significantly more than did all other administrative areas except the Presidents. For the Physical and Academic Skills Needs Assessment of Enrolled Students dimension, the results indicated that Community Instructional Services emphasized this dimension significantly less than did all other administrative areas except Business Affairs and the Presidents. The Faculty/Staff Program Ratings dimension received significantly less emphasis by Student Affairs than by the administrative areas of Academic Affairs and Community Instructional Services.

These results should be useful in tailoring by administrative area the organization of information for presentation to administrators involved in quality-evaluation decision making. For example, the results indicated that the information included in the Student Ratings of Support Services dimension should be given more emphasis and the information included in the Faculty/Staff Program Ratings dimension should be given less emphasis when presenting information to administrators in Student Affairs. As indicated previously in this chapter, the nature of this emphasis might include the presentation of more or less information or might involve some type of weighting of the information related to these dimensions. Similarly, these results might be used to tailor the presentation of information for program quality-evaluation decision making to administrators in other specific administrative areas.

Summary

The results presented in this chapter have demonstrated that there were underlying dimensions of the multiple items of information rated as

highly useful in program quality-evaluation decision making by administrators in Florida public community/junior colleges. Nine such dimensions were identified, discussed, and labeled. Through comparison of the mean factor scores of administrators classified by program area and by administrative area, it was demonstrated that there were statistically significant differences in the degrees of emphasis within the nine identified dimensions between some of the program area classifications and between some of the administrative area classifications. These differences were identified and discussed.

Based upon these results, guidelines are recommended in the next chapter for organizing the identified multiple indicators of quality to increase the probability that administrators will find the presented information credible and useful in making program quality-evaluation decisions in Florida public community/junior colleges.

CHAPTER V
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

The purpose of this study was the identification of any underlying dimensions within the multiple quality indicators rated by administrators in Florida public community/junior colleges as highly useful in making program quality-evaluation decisions. The research questions were: (1) what is the "best" factor structure for the usefulness ratings? and (2) for the identified "best" factor structure, are there significant differences in the mean factor scores between classifications of respondents by program area and between classifications of respondents by administrative area? Additionally, the results of the study were to be used to develop guidelines for organizing the presentation of the information represented in the identified multiple indicators of quality to increase the probability that the organization of the information will be perceived as credible and useful by the administrators involved in making program quality-evaluation decisions in Florida public community/junior colleges.

Of 631 administrators identified to participate in the study, 450 responded by rating 454 items on a survey questionnaire (Appendix C) for their degree of usefulness in program quality-evaluation decision making. Using the mean responses, Pearson product-moment correlation coefficients were calculated for the intercorrelations of the 108 program characteristics

rated as highly useful. The correlation matrices were factor analyzed and the "best" factor structure determined. Factor scores were calculated for the respondents by use of the factor loadings on the identified factors. Comparisons were made of mean factor scores between respondents classified by program area and between respondents classified by administrative area to determine any significant differences.

Summary findings are presented for each research question separately. From the results, conclusions are drawn regarding guidelines for organizing the presentation of the information represented in the program characteristics to increase the probability that the organization of information will be perceived as useful by administrators involved in making program quality-evaluation decisions in Florida public community/junior colleges. Recommendations are made regarding needs for further research.

The analyses related to the first research question resulted in the identification of a factor structure that contained nine interpretable factors representing the underlying dimensions of the ratings of the 108 program characteristics rated as most highly useful in program quality-evaluation decision making. Based upon these nine factors, the following nine dimensions were identified, discussed, and labeled:

Resources Usage
Student Ratings of Support Services
Faculty/Staff Instructional Productivity
Physical and Academic Skills Needs
Assessment of Enrolled Students
Student Ratings of Program
Program Student Output
Faculty/Staff Preparedness
Faculty/Staff Program Ratings
Program Responsiveness

The analyses related to the second research question resulted in the determination of no significant differences in the mean factor scores

between classifications of administrators by program or administrative area on the Faculty/Staff Instructional Productivity and the Program Responsiveness dimensions. Additionally, there were no significant differences in mean factor scores between program areas for the Resources Usage dimension and between administrative areas on the Student Ratings of Program, Program Student Output, or Faculty/Staff Preparedness dimensions. Significant differences in the mean factor scores between some classifications of respondents by program area and between some classifications of respondents by administrative area were found on the following dimensions:

Resources Usage Dimension

Community Instructional Services gave significantly less emphasis to this dimension than did Business Affairs.

Student Ratings of Support Services Dimension

Student Services gave significantly more emphasis to this dimension than did all other program or administrative areas except the Developmental Program Area and the Presidents.

Physical and Academic Skills Needs Assessment of Enrolled Students Dimension

Community Instructional Services gave significantly less emphasis to this dimension than did all other program or administrative areas except the Developmental Program Area and the administrative areas of Business Affairs and the Presidents.

Student Ratings of Program Dimension

The Occupational Program Area gave significantly less emphasis to this dimension than did the Advanced and Professional and Student Services program areas.

Program Student Output Dimension

The Developmental Program Area gave significantly less emphasis to this dimension than did all other program areas except Community Instructional Services.

Faculty/Staff Preparedness Dimension

The Advanced and Professional Program Area gave significantly more emphasis to this dimension than did the Occupational and Community Instructional Services program areas.

Faculty/Staff Program Ratings Dimension

Student Services gave significantly less emphasis to this dimension than did the administrative areas of Academic Affairs and Community Instructional Services and significantly less emphasis than all did all other program areas except the Developmental Program Area.

Conclusions

From the results of this study, the following conclusions were drawn.

It was concluded that there were nine common dimensions underlying the ratings of the 108 program characteristics rated as most highly useful in program quality-evaluation decision making.

It was concluded that these nine dimensions involved: (1) fiscal, physical, and human resources; (2) student ratings of support services including student services; (3) information on the instructional productivity of faculty; (4) the identification of any physical or cognitive needs of students relevant to their performance in their selected programs; (5) ratings of specified aspects of a program by students; (6) indicators of the quantitative output of a program including certain student follow-up information; (7) specified attributes of both full-time

and part-time faculty; (8) ratings of specified aspects of a program by faculty; and (9) indicators of the responsiveness of a program to program evaluations, certification boards, accreditation agencies, the community it serves, the students it serves, and the state it serves, including specified program objectives.

It was concluded that these nine dimensions represented the common dimensions of those aspects of an aggregate value system used by the administrators included in this study when making program quality-evaluation decisions.

It was concluded that, since quality is a value judgment and not an attribute or characteristic of a program, these nine common dimensions are the dimensions of program quality-evaluation decision making in Florida's public community/junior colleges.

It was concluded that the utilization of these nine common dimensions to organize the information represented by the 108 program characteristics for presentation to administrators involved in program quality-evaluation decision making would increase the probability that the administrators will find the format of the information to be credible and helpful in that decision situation.

It was concluded that there were significant differences in the degree of emphasis on specified dimensions between administrators classified within some program areas and between administrators classified within some administrative areas that should be used for tailoring the organization of information for presentation to the administrators in these specified areas for use in program quality-evaluation decision making.

Based upon these conclusions, the following guidelines have been formulated for organizing the information represented in the 108 program characteristics for presentation to administrators involved in program quality-evaluation decision making. The purpose of these guidelines is to assist the person or persons responsible for organizing information for presentation to administrators involved in program quality-evaluation decision making in Florida public community/junior colleges.

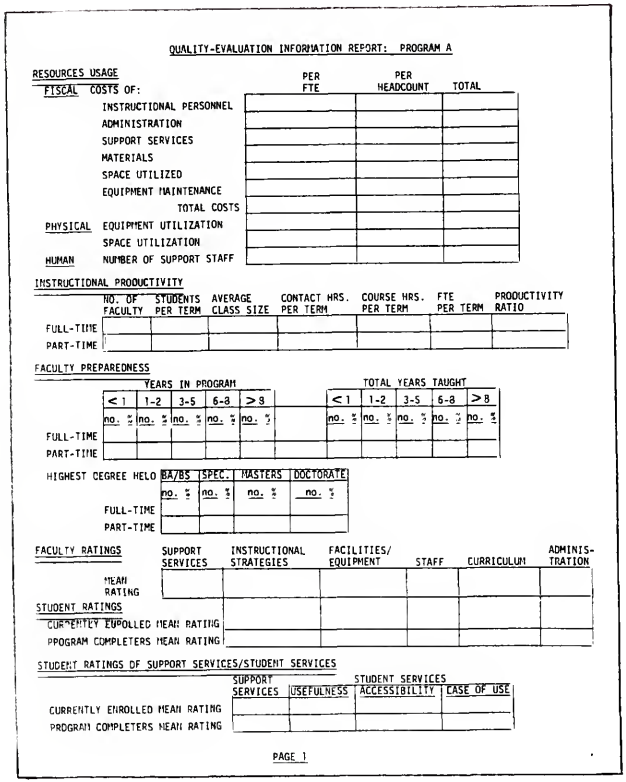
First, the nine dimensions could be used as guides for selecting the information to include in proposals to administrators for program quality-evaluation information systems. Inclusion of information from each of the nine dimensions should result in increasing the probability of proposal approval. In general, the inclusion of those items with greater loadings on the factor representing a dimension should increase the probability of meeting an administrator's information requirements since those are the items with the higher levels of agreement in ratings by administrators for their usefulness in program quality-evaluation decision making. Of course, since these dimensions reflect an aggregate value system, any individual administrator should value information representing these dimensions for usefulness in program quality-evaluation decision making to the degree that the dimensions of his value system relevant to the decision situation are reflected in the aggregate value system.

Second, the nine dimensions could be used as guides for organizing information for presentation to administrators for use in program quality-evaluation decision making. Organizing the information into the nine dimensions should increase the probability that an administrator will find the presented information credible and useful in program quality-

evaluation decision making. For reports to be used in program quality-evaluation decision making, the information items in the report should be grouped as follows: (1) information relating to the fiscal, physical, and human resources used in a program; (2) information relating to student ratings of support services including student services relating to a program; (3) information relating to the instructional productivity of faculty in a program; (4) information relating to any physical or cognitive needs of students relevant to their performance in a program; (5) information relating to ratings of a program by students; (6) information relating to the quantitative student output of a program including student follow-up information; (7) information relating to the attributes of full-time and part-time faculty in a program; (8) information relating to ratings of a program by faculty; and (9) information relating to the responsiveness of a program to program evaluations, certification boards, accreditation agencies, the community it serves, the students it serves, and the state it serves including clearly specified program objectives.

An example of a possible report format is presented in a reduced reproduction in Figure 1. The information items included in each section of the two-page report were presented in Tables 7-15 in Chapter IV. The specific headings used under the subdivisions, such as the headings under "Years in Program" or "Total Years Taught" within the Faculty Preparedness dimension, are used for illustration purposes. The actual headings would be determined locally.

If a greater reduction of information were desired, the nine dimensions could be used as dimensions in a profile format. The items of information included within each dimension could be used to create indices for the dimensions. Methods of creating such indices are suggested as an



QUALITY-EVALUATION INFORMATION REPORT: PROGRAM A

RESOURCES USAGE

		PER FTE	PER HEADCOUNT	TOTAL
FISCAL	COSTS OF:			
	INSTRUCTIONAL PERSONNEL			
	ADMINISTRATION			
	SUPPORT SERVICES			
	MATERIALS			
	SPACE UTILIZED			
	EQUIPMENT MAINTENANCE			
	TOTAL COSTS			
PHYSICAL	EQUIPMENT UTILIZATION			
	SPACE UTILIZATION			
HUMAN	NUMBER OF SUPPORT STAFF			

INSTRUCTIONAL PRODUCTIVITY

	NO. OF FACULTY	STUDENTS PER TERM	AVERAGE CLASS SIZE	CONTACT HRS. PER TERM	COURSE HRS. PER TERM	FTE PER TERM	PRODUCTIVITY RATIO
FULL-TIME							
PART-TIME							

FACULTY PREPAREDNESS

	YEARS IN PROGRAM					TOTAL YEARS TAUGHT				
	< 1	1-2	3-5	6-8	> 8	< 1	1-2	3-5	6-8	> 8
	no. %	no. %	no. %	no. %	no. %	no. %	no. %	no. %	no. %	no. %
FULL-TIME										
PART-TIME										

HIGHEST DEGREE HELD	BA/BS	SPEC.	MASTERS	DOCTORATE
	no. %	no. %	no. %	no. %
FULL-TIME				
PART-TIME				

FACULTY RATINGS

	SUPPORT SERVICES	INSTRUCTIONAL STRATEGIES	FACILITIES/ EQUIPMENT	STAFF	CURRICULUM	ADMINISTRATION
MEAN RATING						

STUDENT RATINGS

CURRENTLY ENROLLED MEAN RATING						
PROGRAM COMPLETERS MEAN RATING						

STUDENT RATINGS OF SUPPORT SERVICES/STUDENT SERVICES

	SUPPORT SERVICES	STUDENT SERVICES		
		USEFULNESS	ACCESSIBILITY	EASE OF USE
CURRENTLY ENROLLED MEAN RATING				
PROGRAM COMPLETERS MEAN RATING				

PAGE 1

ENROLLED STUDENTS: PHYSICAL AND COGNITIVE NEEDS ASSESSMENT

	LEVEL OF PREVIOUS ACHIEVEMENT					RESULTS OF LOCAL ASSESSMENT				
	A	B	C	D	E	A	B	C	D	E
	no. %	no. %	no. %	no. %	no. %	no. %	no. %	no. %	no. %	no. %
ENTERING STUDENTS										

	MAJOR AREA OF STUDY				REMEDIAL ASSISTANCE DESIRED			
	AREA A	AREA B	AREA C	AREA D	READING	COMPOSITION	COMPUTATION	STUDY SKILLS
	no. %	no. %	no. %	no. %	no. %	no. %	no. %	no. %
ENTERING STUDENTS								
CURRENTLY ENROLLED								

	TYPE OF HANDICAP							
	PHYSICAL				COGNITIVE			
	TYPE 1	TYPE 2	TYPE 3	NONE	TYPE 1	TYPE 2	TYPE 3	NONE
	no. %	no. %	no. %	no. %	no. %	no. %	no. %	no. %
ENTERING STUDENTS								
CURRENTLY ENROLLED								

CURRENTLY ENROLLED STUDENTS WITH FAILING GRADE: no. %

STUDENT OUTPUT

COMPLETING PROGRAM	TAKING STATE EXAMS	PASSING STATE EXAMS
no. %	no. %	no. %

AVERAGE TIME FOR COMPLETION

TYPE OF CERTIFICATE/LICENSE RECEIVED

TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5
no. %	no. %	no. %	no. %	no. %

PROGRAM RESPONSIVENESS

CERTIFICATION BOARD RATING: ____ ACCREDITATION AGENCY RATING: ____

LEVEL OF DEMAND

STUDENTS (number applying)	SERVICE AREA (potential students or jobs)	STATE (potential students or jobs)

CLARITY OF PROGRAM OBJECTIVES

OBJECTIVE	CLARITY RATING

CHANGES RESULTING FROM:

PROGRAM EVALUATION	ACCREDITATION STUDIES

PAGE 2

Figure 1. Sample format for program quality-evaluation information report.

objective for further research. A sample format for such a profile is presented in Figure 2. Greater detail could be incorporated into the profile as illustrated in Figure 2 for the Student Ratings dimension.

Finally, the results from the analyses related to the second research question could be used to adjust or tailor program quality-evaluation information reports or profiles for the specific program or administrative areas where significant differences in mean factor scores were identified. These results indicated that when preparing program quality-evaluation information reports for Community Instructional Services, the Resources Usage dimension and the Physical and Academic Skills Needs Assessment of Enrolled Students dimension should be deemphasized. When preparing program quality-evaluation reports for Student Services, the Student Ratings of Support Services dimension should be emphasized and the Faculty/Staff Program Ratings dimension should be deemphasized. For quality-evaluation information reports to administrators in the Occupational Program Area, the Student Ratings of Program dimension should be deemphasized. For quality-evaluation information reports to administrators in the Advanced and Professional Program Area, the Faculty/Staff Preparedness dimension should be emphasized.

The nature of emphasizing or deemphasizing a dimension could consist of the order of placement of the information in the report or the profile, highlighting in some manner the specific dimension to be emphasized, including more or less information related to a specific dimension in the report or profile, or weighting the index of a dimension for use in the profile format. The method of emphasis was not an objective of this study, only the determination that certain dimensions should receive more or less emphasis for specified program or administrative areas.

QUALITY-EVALUATION INFORMATION PROFILE: PROGRAM A

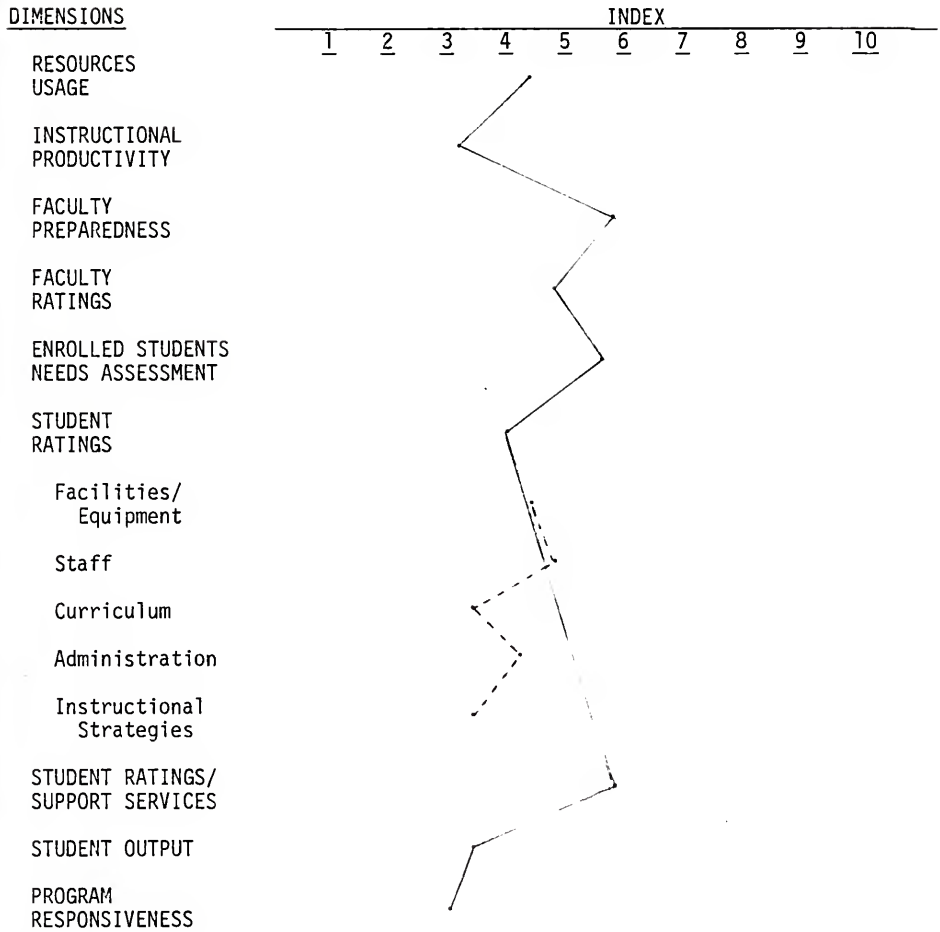


Figure 2. Sample format for program quality-evaluation information profile.

Recommendations for Further Study

It is recommended that this study be replicated with the same administrators to determine whether response patterns remain the same or change. If the dimensions identified in this study represent the dimensions of an aggregate value system relevant to the decision situation, then response patterns should remain relatively stable over time since attitudes tend to remain relatively stable over time.

It is recommended that this study be replicated in other community college systems and in other types of colleges to determine whether the dimensions identified in this study are unique to program quality-evaluation decision making in Florida community colleges or can be generalized to other institutional settings.

It is recommended that the methodology used in this study to identify underlying dimensions of the ratings of information useful in program quality-evaluation decision making be used in other decision situations to identify relevant dimensions for formatting information for presentation to decision makers in those decision situations.

It is recommended that the information identified as included in the nine dimensions in this study be used in a study to determine methodologies for creating indices for the nine dimensions for use in producing program quality-evaluation information profiles.

Finally, it is recommended that additional research in program quality-evaluation decision making involve investigation of the attitudes of the administrators involved to determine in as direct a manner as possible the dimensions of administrators' attitudes that are relevant to this particular decision situation. The creation of an instrument to assess such attitudes might be useful for quickly determining what types of

information an individual administrator or a specific group of administrators value for program quality-evaluation decision making.

APPENDIX A
CLASSIFICATIONS OF RESPONDENTS
USED IN DATA ANALYSIS

Program Areas

1. Advanced and Professional Program Area--commonly referred to as university parallel, the first two years of a baccalaureate program. Included in this group were respondents classified with position codes 14-20. Position titles with associated codes and frequencies are listed in Appendix D.
2. Occupational Program Area--or vocational-technical education, terminal certificate or degree programs preparing students for employment in a specific trade or field. Included in this group were respondents classified with position codes 21-26.
3. Community Instructional Services Program Area--programs of short, credit or noncredit classes designed to provide enrichment for students. Included in this area were respondents classified with position code 29.
4. Developmental Program Area--or compensatory education, designed to assist students in improving deficient basic skills necessary for program work. Included in this area were respondents classified with position code 30.
5. Student Services Program Area--various auxilliary services provided to students facilitating their progress through one of the academic areas including such services as counseling, student

activities, admissions, financial aid, etc. Included in this group were respondents classified with position codes 32-41.

Administrative Areas

1. General Administration--respondents with responsibilities of a general nature in the operation of the college's program or services. Included in this area were respondents classified with position codes 2-12.
2. Academic Affairs--respondents with responsibilities of administering one or more of the college's academic programs. Included in this area were respondents classified with position codes 13-28 and 30-31.
3. Student Affairs--respondents with responsibilities of administering one or more of the college's student services programs. Position codes included in this area were identical to those used in the Student Services Program Area.
4. Community Instructional Services--respondents with responsibilities of administering the college's adult and continuing education or community instructional services programs. The position code included in this area was identical to that used for the Community Instructional Services Program Area.
5. Business Affairs--respondents associated with the operation of the business offices (budget, accounting, personnel, etc.) of the college. Included in this area were respondents classified with position codes 42-50.
6. President--the chief executive officer of the college. Included in this area were respondents classified with position code 1.

APPENDIX B
DESCRIPTION OF IRC PROJECT
METHODS AND PROCEDURES

The Problem

The problem in this project was to determine the degree of usefulness of various types of information (program characteristics) as perceived by administrators in Florida's public community colleges in making quality-evaluation decisions about programs or services offered by their colleges. An ancillary purpose was to identify similarities or differences in the perceived mean usefulness-ratings of the program characteristics for administrators according to various classifications including:

1. The program or service area with which the responding administrator was primarily associated.
2. The administrative area within which the responding administrator held his or her position.
3. Personal characteristics of respondents including degree level, sex, years in present position, years at present college, years in community college education, and years in education other than community college education.
4. General characteristics of the institution within which the administrators were employed including the market region of the state where the institution was located, whether or not the institution was designated by the state as an area vocational

education school, the total size of the institution in terms of FTE served, the percent of total college FTE served in the Advanced and Professional Program Area, the percent of total college FTE served in the Occupational Program Area, the percent of total college FTE served in the Developmental Program Area, and the percent of total college FTE served in the Community Instructional Services Program Area.

5. Opinions of respondents related to amount of time spent in, extent of involvement in, or level of experience in program quality-evaluation decision making. Also the opinions of respondents as to their perception of the degree to which their positions are associated with each of the program areas.

A description of these classifications can be found in Appendix A.

The following sections describe the design of the project, the development of the project questionnaire, the survey population, collection of the data, and analysis of the data.

Design of the Project

This project was designed to assess the perceptions of community college administrators of the usefulness of various program characteristics for program quality-evaluation decision making. The review of related literature on the decision-making model of educational evaluation indicated that the determination of what type of information to be used in educational decision making should be the responsibility of the decision maker, not the evaluator (Stufflebeam et al., 1971; Alkin, 1969; Craven, 1975). Therefore, a survey research design was adopted for this project and a questionnaire was developed to measure administrators' perceptions

of the usefulness of various program characteristics for program quality-evaluation decision making for programs or services offered by their colleges. This research design was very similar to the design used by the Educational Testing Service to assess quality in doctoral education programs (Clark et al., 1976). This questionnaire was organized to collect data in four areas:

1. Demographic data of respondents. These data included the respondent's name, position, college, years in present position, years at present college, years in community college education, years in education other than community college education, age, sex, and highest degree held.
2. The program perspective respondents used in rating the usefulness of the program characteristics. The perspectives were general (no specific program area in mind), advanced and professional, occupational, developmental, community instructional services, student support services, and other.
3. Usefulness ratings of the program characteristics for program quality-evaluation decision making.
4. Opinions of respondents of the amount of time spent in program quality-evaluation activities, the extent of their involvement in program quality-evaluation decision making, their perceived level of experience in program quality-evaluation, and the degree to which their position was associated with each program area.

Development of the Project Questionnaire

In making program quality-evaluation decisions, administrators may desire information related to many aspects or characteristics of a

program. The questionnaire designed and used in this project contained a list of 434 program characteristics for respondents to rate for degree of usefulness in making program-quality decisions.

The program characteristics rated in this study were identified by:

1. A review of evaluative criteria utilized to rate the quality of programs or institutions in various quality-evaluation studies including those designed to identify "indicators of quality" (e.g., Banghart et al., 1978; Fotheringham, 1978) for educational programs or institutions.
2. A review of various state and federal government reports identifying different types of information currently being collected and reported. The primary source in this area was the Florida Community College Management Information System Manual (Division of Community Colleges, 1980) which contained copies of many data reporting forms, including the required data with formatting requirements, used for various state and federal reports.

From these sources a list of program characteristics was compiled. This list was submitted for review by a panel of community college management information specialists and institutional researchers consisting of IRC institutional representatives for the year 1980-81. A letter was sent to each representative with a list of the program characteristics requesting that the list be reviewed and characteristics added, deleted, or modified in relation to their potential use in program quality-evaluation decision making. In this review none of the identified characteristics were deleted, six characteristics were added, and the descriptions of various characteristics were modified. The 434 program characteristics included in the project questionnaire resulted from this process.

Using these program characteristics, a questionnaire was developed to collect the required data. The questionnaire was submitted for review to the same panel of IRC representatives utilized for refinement of the program characteristics. The panel evaluated the questionnaire and provided input in the following areas:

1. Refinement of the questionnaire's directions.
2. Refinement of the statements describing the program characteristics.
3. Refinement of the organization of the characteristics.
4. Refinement of the rating scale.
5. Refinement of the questionnaire format.
6. Determination of the time needed for questionnaire completion.

This process resulted in various modifications of the questionnaire which was sent out again for review by the panel. The final form of the questionnaire resulted from this second review. A copy of the questionnaire can be found in Appendix C.

The questionnaire consisted of five sections. Section one requested respondents to print their name, current position, and name of college. Section two described the purpose of the project, the organization of the questionnaire, and the directions for rating the program characteristics. The program characteristics were organized into four categories concerning information about students, faculty/staff, costs/resources, and general information. Examples describing the rating process were provided at the beginning of each category. Respondents were requested to add any program characteristics which they thought were of use but which were not included in the questionnaire.

Section two also contained a description of the four-point rating scale used to rate the program characteristics for degree of usefulness in program quality-evaluation decision making. The scale was: (1) essential, (2) very useful, (3) some usefulness, and (4) little or no usefulness. Respondents were requested to rate any program characteristics they perceived as not applicable to their respective program or service area with a "4." The rating scale was printed on a loose insert providing respondents a quick reference when completing the questionnaire (Appendix C).

Section three requested that the respondents indicate the program perspective they would use in rating the program characteristics. Six choices of perspectives were listed: general, advanced and professional, occupational, developmental, community instructional services, and student support services. An "other" choice was provided for respondents to specify a perspective different from those listed. Following section three, respondents were requested to proceed in rating the characteristics.

Section four consisted of a series of questions designed to collect demographic data on the respondents. These data included years in present position, years at present college, years in community college education, years in education other than community college education, birthdate, sex, and highest degree held.

The fifth section of the questionnaire requested respondents to indicate their opinion of the degree to which their position was associated with each of the program areas, the amount of time they spent in program quality-evaluation decision making, and their level of experience in program quality-evaluation. Also, respondents were requested

to add any comments regarding the design of the project, the questionnaire, or the program quality-evaluation process at their college.

Collection of Data

During the development of the questionnaire, the review panel was asked to approximate the amount of time needed for its completion. The consensus of the review panel was that approximately 45 minutes to one hour was needed. Realizing the difficulty of securing the participation of administrators in a project that required such substantial investment of their time, procedures for the collection of data were used that would increase the probability of obtaining their participation.

To gain publicity and support for the project, the endorsement of the Council of Presidents was requested and received. Under this endorsement, a letter was sent to each community college president describing the project and requesting that they appoint an individual at their college to serve as a project coordinator. Twenty-four of the 28 public community colleges in Florida chose to participate in the project through their appointment of project coordinators.

Project coordinators were sent a letter thanking them for agreeing to serve and describing their role as project coordinator for their college. The first task of the project coordinator was to identify, by name and position, all administrators at their college who met the criteria for participation in the project. Forms and self-addressed envelopes were included for their convenience in completing this task.

When the lists of administrators were received, letters were sent to all describing the project and encouraging their participation. Packets were prepared for each participating administrator which included a cover letter, a one-page synopsis of the project, the questionnaire,

and a return label addressed to their institution's project coordinator. The second task of the project coordinators was to distribute and collect the questionnaires. Each project coordinator was sent a letter describing the distribution and collection process along with the prepared packet for each identified administrator at their college. This letter explained that the packets were to be distributed as soon as possible to the participating administrators. The participating administrators were requested to complete the questionnaires within ten days and return them to their college's project coordinator by affixing the included return label. The project coordinators were requested to allow approximately two weeks from the data of the distribution of the project questionnaires for their return and to forward to the IRC the questionnaires that had been returned by that date.

With the return of the completed questionnaires, project coordinators were sent a letter thanking them for their help, requesting the return of any subsequently received questionnaires, and informing them that they were not responsible for conducting follow-up activities. Follow-up procedures involved two steps. First a letter was sent to those administrators from whom questionnaires had not been received requesting that they complete the questionnaires at their earliest convenience and return them as soon as possible. If this process was ineffective, a second letter was sent which included a copy of the questionnaire and a request that the administrator complete and return it as soon as possible. Each administrator completing and returning the questionnaire was sent a letter thanking them for their investment of time and effort in the project.

When received, each questionnaire was given a position code based on the reported position and an institutional code based on the reported college. These codes were used to identify the respondents for follow up and to facilitate classification of the respondents for various analyses. The position codes used for classifying the respondents can be found in Appendix D.

Survey Population

The identification of the decision makers included in the project was the responsibility of the designated project coordinator at each participating college. Project coordinators identified, by name and position, all administrators with some instructional or student personnel services responsibility as identified on the institution's yearly personnel report (SA-1, part 3) as administrative, managerial, or professional (Division of Community Colleges, 1980, p. 10.1).

Analysis of the Data

The data were analyzed with the assistance of the SAS (Statistical Analysis System) computer system for data analysis. The mean, standard deviation, variance, range, and measures of skewness and kurtosis were calculated for each program characteristic for all respondents and for each classification of respondents described in Appendix A. Using the calculated means, the program characteristics were ranked for all respondents and for respondents in each classification. Spearman rank-order correlation coefficients were calculated for the upper quartile of program characteristics ranked by the mean usefulness ratings for all responsdents and for respondents in each classification.

For all respondents and for respondents classified into the five program areas and the five administrative areas and presidents, the

program characteristics in the upper quarter of ranked mean usefulness ratings were organized into four categories as they were presented in the project questionnaire (program characteristics relating to students, faculty/staff, costs/resources, and general information). The differences or similarities in the program characteristics and in the ranks of the program characteristics contained in these groupings were discussed. For all respondents and for respondents classified into the five program areas, the program characteristics in the upper quarter of ranked mean usefulness ratings were organized into information profiles using eleven types of information for all program areas except Student Services which required a twelfth type of information. The areas of similarities or differences in these information profiles for each of the five program areas were discussed.

APPENDIX C

QUESTIONNAIRE

PROGRAM QUALITY INDICATORS PROJECT QUESTIONNAIRE

STEP 1

Print or type:

YOUR NAME _____

YOUR POSITION _____

NAME OF COLLEGE _____

STEP 2

You may use various information (program characteristics) to evaluate the quality of academic or student support services programs. The purpose of this questionnaire is to determine your rating of the USEFULNESS of these characteristics in evaluating program quality. Rating choices are provided on a loose insert for quick reference.

The program characteristics are organized into four categories concerning information about:
I. Students II. Faculty/Staff III. Costs/Resources IV. General

In each category you are to rate each characteristic for DEGREE OF USEFULNESS in making QUALITY-EVALUATION DECISIONS about programs. Examples are given for each category.

Within each category space is provided for you to add characteristics. Rate any added characteristic in the same manner as described for other characteristics in the category.

SCAN THE ENTIRE QUESTIONNAIRE BEFORE YOU BEGIN RATING.

PLEASE USE A PENCIL FOR YOUR RESPONSES.

DIRECT ANY QUESTIONS REGARDING THE QUESTIONNAIRE THROUGH YOUR COLLEGE'S PROJECT COORDINATOR TO THE IRC.

STEP 3

In the list below, check one or more program areas to indicate the perspective you will use in rating the characteristics for degree of usefulness in making quality-evaluation decisions about programs.

___General (No specific program area in mind) ___Advanced and Professional

___Occupational ___Developmental ___Community Instructional Services

___Student Support Services ___Other: _____
(Please specify)

IRC COOPERATION FOR PROGRESS THROUGH RESEARCH
florida community junior college inter-institutional research council

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

I. PROGRAM CHARACTERISTICS RELATING TO STUDENTS

STUDENT CLASSIFICATIONS
- ENTERING = students at the time they begin a program
- CURRENTLY ENROLLED = all students currently enrolled in a program, not just those beginning a program
- COMPLETERS = students who have received a degree or certificate, finished an orientation program, etc.
- LEAVERS = students who have withdrawn or otherwise left a program without officially completing it

* *

FOR EACH CHARACTERISTIC, IN EACH OF THE FOUR COLUMNS OF STUDENT CLASSIFICATIONS WRITE A NUMBER SELECTED FROM THE RATING CHOICES (LOOSE INSERT) TO INDICATE YOUR OPINION OF THAT CHARACTERISTIC'S USEFULNESS IN MAKING QUALITY-EVALUATION DECISIONS ABOUT PROGRAMS.

EXAMPLE

		entering	currently enrolled	completers	leavers
employment status	05	3	3	1	4

From the perspective checked in STEP 3:

The "3" in the "entering" column and the "3" in the "currently enrolled" column indicate an opinion that the information on employment status of ENTERING and CURRENTLY ENROLLED students has "some usefulness" in making quality-evaluation decisions about programs. The "1" in the "completers" column and the "4" in the "leavers" column indicate respectively the opinions that information on employment status of COMPLETERS is "essential" and of LEAVERS is of "little or no usefulness" (or "not applicable") in making quality-evaluation decisions about programs.

* *

CHARACTERISTICS		STUDENT CLASSIFICATIONS			
Percent or number of students by:		entering	currently enrolled	completers	leavers
sex classification	01	___	___	___	___
age classification	02	___	___	___	___
race classification	03	___	___	___	___
marital status	04	___	___	___	___
employment status	05	___	___	___	___
citizenship classification	06	___	___	___	___
household income classification	07	___	___	___	___
commuting distance categories	08	___	___	___	___
educational status of family	09	___	___	___	___

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

(CONTINUE RATING EACH STUDENT-RELATED PROGRAM CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING QUALITY-EVALUATION DECISIONS ABOUT PROGRAMS FROM PERSPECTIVE CHECKED IN STEP 3.)

CHARACTERISTICS		STUDENT CLASSIFICATIONS			
Percent or number of students by:		entering	currently enrolled	completers	leavers
military service classification	10	___	___	___	___
language spoken in home	11	___	___	___	___
parents' occupational categories	12	___	___	___	___
source of financial support	13	___	___	___	___
type of handicap	14	___	___	___	___
career decision status	15	___	___	___	___
major area of study	16	___	___	___	___
type of high school diploma	17	___	___	___	___
degree level sought	18	___	___	___	___
part time/full time classification	19	___	___	___	___
number of hours enrolled	20	___	___	___	___
number of hours completed	21	___	___	___	___
number of hours withdrawn	22	___	___	___	___
number of hours incomplete	23	___	___	___	___
number of hours with failing grade	24	___	___	___	___
number of hours of developmental/ remedial work	25	___	___	___	___
number of hours repeated	26	___	___	___	___
term GPA categories	27	___	___	___	___
cumulative GPA categories	28	___	___	___	___
cumulative GPA categories for program related course work	29	___	___	___	___
number of CLEP hours earned	30	___	___	___	___
amount of time since last formal educational experience	31	___	___	___	___
level of previous academic achievement	32	___	___	___	___
number of years of related work	33	___	___	___	___

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

(CONTINUE RATING EACH STUDENT-RELATED PROGRAM CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING QUALITY-EVALUATION DECISIONS ABOUT PROGRAMS FROM PERSPECTIVE CHECKED IN STEP 3.)

CHARACTERISTICS		STUDENT CLASSIFICATIONS			
Percent or number of students by:		entering	currently enrolled	completers	leavers
level of awareness of college's programs, services, etc.	34	___	___	___	___
I.Q. categories	35	___	___	___	___
personality types	36	___	___	___	___
self-concept categories	37	___	___	___	___
test anxiety levels	38	___	___	___	___
level of financial assistance desired	39	___	___	___	___
types of developmental or remedial assistance desired	40	___	___	___	___
level of public service involvement (however measured)	41	___	___	___	___
level of involvement in high school activities	42	___	___	___	___
academic skills level as measured by local instruments	43	___	___	___	___
academic skills level as measured by state instruments	44	___	___	___	___
academic skills level as measured by national instruments	45	___	___	___	___
scholastic honors, awards, or memberships earned (scholarships, honorary societies, etc.)	46	___	___	___	___
holding jobs for which trained	47	___	___	___	___
salary categories	48	___	___	___	___
rate or number of legal violations	49	___	___	___	___
time spent in program	50	___	___	___	___
number of jobs held since leaving program	51	___	___	___	___
performance on standardized state tests	52	___	___	___	___
performance on standardized national tests	53	___	___	___	___

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

(CONTINUE RATING EACH STUDENT-RELATED PROGRAM CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING QUALITY-EVALUATION DECISIONS ABOUT PROGRAMS FROM PERSPECTIVE CHECKED IN STEP 3.)

CHARACTERISTICS		STUDENT CLASSIFICATIONS			
Percent or number of students by:		entering	currently enrolled	completers	leavers
use of various student services	54	___	___	___	___
need for various student services	55	___	___	___	___
PLEASE NOTE FOR THE FOLLOWING CHARACTERISTICS A SINGLE STUDENT CLASSIFICATION IS IMPLIED					
Number of students enrolling in a program	56	___	X	X	X
Percent of total college FTE in program	57	X	___	X	X
Percent of total college unduplicated headcount in program	58	X	___	X	X
Average GPA of students in program	59	X	___	X	X
Average course load for students in program	60	X	___	X	X
Number or percent of students completing a program	61	X	X	___	X
Average time taken for completion of a program	62	X	X	___	X
Percent or number of students taking state board or licensure exams	63	X	X	___	X
Percent or number of students passing state board or licensure exams	64	X	X	___	X
Percent or number of students by type of license, certificate or registration received	65	X	X	___	X
Percent or number of students withdrawing from a program	66	X	X	X	___
_____	Other	___	___	___	___
_____	Other	___	___	___	___
_____	Other	___	___	___	___
_____	Other	___	___	___	___

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

THE FOLLOWING CHARACTERISTICS RELATE TO STUDENTS WHO HAVE TRANSFERRED OR ARE NATIVE TO FOUR-YEAR COLLEGES OR UNIVERSITIES.

STUDENT CLASSIFICATIONS
- NATIVE STUDENTS
- TRANSFERS WITH ASSOCIATE DEGREE
- TRANSFERS WITHOUT ASSOCIATE DEGREE

CONTINUE RATING EACH STUDENT-RELATED PROGRAM CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING PROGRAM QUALITY-EVALUATION DECISIONS FROM PERSPECTIVE CHECKED IN STEP 3.

CHARACTERISTIC		STUDENT CLASSIFICATIONS		
Percent or number of students by:		native students	transfer with assoc. degree	transfer without assoc. degree
enrollment in a four-year institution	67	___	___	___
type of college or university entered	68	___	___	___
name of university or college in which enrolled	69	___	___	___
number of hours transferred	70	___	___	___
upper division entering term GPA categories	71	___	___	___
upper division cumulative term GPA categories	72	___	___	___
upper division current term GPA categories	73	___	___	___
GPA per discipline area	74	___	___	___
GPA per type of course	75	___	___	___
academic major	76	___	___	___
number of times changed major	77	___	___	___
completing a four-year degree	78	___	___	___
time taken for completion of four-year degree	79	___	___	___
entering graduate school	80	___	___	___
average GPA	81	___	___	___
average course load	82	___	___	___

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

(CONTINUE RATING EACH STUDENT-RELATED PROGRAM CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING QUALITY-EVALUATION DECISIONS ABOUT PROGRAMS FROM PERSPECTIVE CHECKED IN STEP 3.)

CHARACTERISTICS		STUDENT CLASSIFICATIONS		
Percent or number of students by:		native students	transfer with assoc. degree	transfer without assoc. degree
_____	Other	___	___	___
_____	Other	___	___	___
_____	Other	___	___	___
_____	Other	___	___	___

II. PROGRAM CHARACTERISTICS RELATING TO FACULTY/STAFF

* * * \

APPENDIX C (continued)

(CONTINUE RATING EACH FACULTY/STAFF-RELATED PROGRAM CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING QUALITY-EVALUATION DECISIONS ABOUT PROGRAMS FROM PERSPECTIVE CHECKED IN STEP 3.)

CHARACTERISTICS		FACULTY/STAFF CLASSIFICATIONS	
Percent or number of Faculty/Staff by:		part-time	full-time
sex categories	12	____	____
age categories	13	____	____
race categories	14	____	____
type of language spoken	15	____	____
level of research activity	16	____	____
level of publication activity	17	____	____
level of participation in professional organizations	18	____	____
level of use of alternative instructional methods	19	____	____
level of participation in college governance	20	____	____

CHARACTERISTICS		FACULTY/STAFF CLASSIFICATIONS	
Percent or number of Faculty/Staff by:		part-time	full-time
level of participation in program decision-making	21	____	____
level of involvement in campus extracurricular activities	22	____	____
level of public service	23	____	____
rate of faculty/staff turnover	24	____	____
_____	Other	____	____
_____	Other	____	____
_____	Other	____	____
_____	Other	____	____

FOR THE FOLLOWING FACULTY/STAFF RELATED PROGRAM CHARACTERISTICS, THE FULL-TIME/PART-TIME CLASSIFICATIONS DO NOT APPLY. SIMPLY RATE EACH CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING QUALITY-EVALUATION DECISIONS.

ratio of part-time to full-time faculty/staff	25	____	ratio of faculty to student support staff	27	____
ratio of faculty/staff to clerical staff	26	____	ratio of faculty/staff to administrative personnel	28	____
_____	Other	____	_____	Other	____

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

III. PROGRAM CHARACTERISTICS RELATING TO COSTS AND RESOURCES

* *

FOR EACH CHARACTERISTIC, IN EACH OF THE THREE COLUMNS OF REPORTING CLASSIFICATIONS WRITE A NUMBER SELECTED FROM THE RATING CHOICES (LOOSE INSERT) TO INDICATE YOUR OPINION OF THAT CHARACTERISTIC'S USEFULNESS IN MAKING QUALITY-EVALUATION DECISIONS ABOUT PROGRAMS FROM THE PERSPECTIVE CHECKED IN STEP 3.

EXAMPLE

		per program FTE	per program unduplicated headcount	per total program
cost of materials	03	2	1	1

From the perspective checked in STEP 3:

The "2" in the "per program FTE" column indicates an opinion that information on cost of materials PER PROGRAM FTE is "very useful" in making program quality-evaluation decisions. In the next two columns, the "1" indicates an opinion that information on cost of materials PER PROGRAM UNDUPLICATED HEADCOUNT and PER TOTAL PROGRAM is "essential" in making program quality-evaluation decisions.

* *

CHARACTERISTICS		REPORTING CLASSIFICATIONS per program FTE	per program unduplicated headcount	per total program
total cost	01	___	___	___
cost of instructional personnel	02	___	___	___
cost of materials	03	___	___	___
cost of equipment maintenance	04	___	___	___
cost of space utilized	05	___	___	___
cost of support services	06	___	___	___
cost of program administration	07	___	___	___
cost of needs assessment or other necessary research	08	___	___	___
cost of program evaluation	09	___	___	___
cost of accreditation studies	10	___	___	___
space utilization	11	___	___	___
equipment utilization	12	___	___	___
number of library holdings	13	___	___	___
number of support staff	14	___	___	___

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

(CONTINUE RATING EACH COSTS/RESOURCES-RELATED PROGRAM CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING PROGRAM QUALITY-EVALUATION DECISIONS FROM PERSPECTIVE CHECKED IN STEP 3.)

CHARACTERISTICS		REPORTING CLASSIFICATIONS: per program FTE	per program unduplicated headcount	per total program
_____	Other	___	___	___
_____	Other	___	___	___
_____	Other	___	___	___
_____	Other	___	___	___

IV. PROGRAM CHARACTERISTICS RELATING TO GENERAL INFORMATION

* * * \

APPENDIX C (continued)

(CONTINUE RATING EACH GENERAL INFORMATION-RELATED CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING PROGRAM QUALITY-EVALUATION DECISIONS FROM PERSPECTIVE CHECKED IN STEP 3.)

CHARACTERISTICS		RATING SOURCE ALTERNATIVES RATINGS BY: currently enrolled students	program completers	program leavers	faculty/ staff	community (general)
Ratings of:						
support services	06	___	___	___	___	___
usefulness of student services	07	___	___	___	___	___
accessibility of student services	08	___	___	___	___	___
ease of use of student services	09	___	___	___	___	___
_____	Other	___	___	___	___	___
_____	Other	___	___	___	___	___
_____	Other	___	___	___	___	___
_____	Other	___	___	___	___	___

FOR THE FOLLOWING CHARACTERISTICS, SIMPLY RATE EACH CHARACTERISTIC FOR DEGREE OF USEFULNESS IN MAKING PROGRAM QUALITY-EVALUATION DECISIONS FROM PERSPECTIVE CHECKED IN STEP 3.

employer opinion of program completers	10	___	number/types of changes as a result of program evaluation	20	___
employer opinion of program non-completers	11	___	number/types of changes as a result of accreditation studies	21	___
job satisfaction ratings by completers	12	___	level of demand for program/ service by students	22	___
job satisfaction ratings by non-completers	13	___	level of demand for program/ service in service area	23	___
ratings by external consultants	14	___	level of demand for program/ service in state	24	___
ratings by certification boards	15	___	level of demand for program/ service in nation	25	___
ratings by accreditation agencies	16	___	_____	Other	___
number of alternative educational methods offered	17	___	_____	Other	___
program admission requirements	18	___	_____	Other	___
clearly stated program objectives	19	___	_____	Other	___

CONTINUE ON NEXT PAGE

APPENDIX C (continued)

STEP 4: Please provide the following information.

Years in present position: ____ Years at present college: ____

Years in community college education: ____

Years in education other than community college education: ___

Birthdate: ___/___/___ Sex: ___female ___male
(mo) (da) (yr)

Highest degree held: ___bachelor ___master ___specialist ___doctorate

STEP 5: Please indicate your opinions of the following.

OPINION CHOICES
1 = NONE ("None of my activities or time")
2 = LITTLE ("Less than one-fourth but more than none of my activities or time")
3 = SOME ("One-fourth or more but less than three-fourths of my activities or time")
4 = CONSIDERABLE ("Three-fourths or more but less than all of my activities or time")
5 = ALL(TOTAL) ("100% of my activities or time")

Using one of the OPINION CHOICES listed above, indicate your perception of:

- the degree to which your POSITION is associated with each program area:

  ___Advanced and Professional ___Community Instructional Services

  ___Developmental ___Occupational ___Student Support Services

- the amount of TIME you spend in program quality-evaluation activities:____

- the extent of your INVOLVEMENT in program quality-evaluation decision-making at your institution: ____

Please indicate your perception of your LEVEL OF EXPERIENCE in program quality-evaluation decision-making by checking one of the following:

___NONE ___LITTLE ___SOME ___CONSIDERABLE

PLEASE ADD ANY COMMENTS REGARDING THE PROGRAM QUALITY-EVALUATION PROCESS AT YOUR COLLEGE OR ANY COMMENTS ABOUT THIS QUESTIONNAIRE (ATTACH ADDITIONAL PAGE IF REQUIRED).

STEP 6: Please return this questionnaire to the project coordinator at your college. Thank you for the expenditure of your time and energy on this project.

APPENDIX C (continued)

RATING CHOICES

1 = ESSENTIAL	("I do not see how I could make a judgment about the quality of a program without considering this characteristic")
2 = VERY USEFUL	("I would feel hindered in making a judgment about the quality of a program without considering this characteristic, but I would make a judgment without it")
3 = SOME USEFULNESS	("Although I would like to consider this characteristic in making a judgment about the quality of a program, I would not feel hindered in making a judgment without it")
4 = LITTLE OR NO USEFULNESS	("I probably would not consider this characteristic in arriving at a judgment of the quality of a program")

Please rate any "Not Applicable" judgments with a "4".

APPENDIX D
POSITION CODES USED IN THE CATEGORIZATION
OF RESPONDENTS BY ADMINISTRATIVE AREA AND
PROGRAM AREA WITH FREQUENCIES

Position Code	Title	Frequency
01	President	13
02	Executive Vice President	9
03	Provost/Center Director	24
04	Assistant to the President	4
05	Research and Planning	10
06	Development	8
07	Special Services	8
08	EA/EO Coordinator	8
09	Special Projects	7
10	Public Relations	3
11	Management Information Systems	5
12	Other General Administration	3
13	Chief Academic Officer	30
14	Program Director-Communications	12
15	Program Director-Mathematics	13
16	Program Director-Sciences	8
17	Program Director-Humanities	10
18	Program Director-Fine Arts	2
19	Program Director-Social Sciences	10
20	Program Director-Other General Education	10

Position Code	Title	Frequency
21	Program Director-Business	20
22	Program Director-Industrial	9
23	Program Director-Allied Health	23
24	Program Director-Law Enforcement	2
25	Program Director-Other Technical Education	14
26	Program Director-Other Occupational Education	15
27	Director CETA/Cooperative Education	1
28	Instructional Resources	23
29	Director-Continuing Education/Community Instructional Services	21
30	Developmental Education	5
31	Other Academic Affairs	3
32	Chief Student Affairs Officer	36
33	Financial Aid	11
34	Counseling	10
35	Admissions	7
36	Veterans' Affairs	2
37	Registrar	11
38	Placement & Follow-Up	2
39	Student Activities	3
40	Athletics	2
41	Other Student Affairs	4
42	Chief Business Affairs Officer	6
43	Budget	3
44	Purchasing	1

Position Code	Title	Frequency
45	Personnel	8
46	Accounting	3
47	Physical Plant	2
48	Auditor	3
49	Data Processing	3
50	Other Business Affairs	0
	TOTAL	450

APPENDIX E
MEAN RATINGS FOR PROGRAM CHARACTERISTICS FOR N=450 AND N=315

Means N 450	Means N 315		Program Characteristics
1.38	1.37	1.	Total cost of program
1.42	1.40	2.	Ratings of program curriculum by program completers
1.43	1.36	3.	Employer opinion of program completers
1.44	1.42	4.	Number or percent of students completing a program
1.45	1.41	5.	Clearly stated program objectives
1.47	1.48	6.	Cost of instructional personnel per total program
1.51	1.50	7.	Total cost per program FTE
1.51	1.45	8.	Level of demand for program/service in service area
1.52	1.54	9.	Number or percent of full-time faculty/staff by degrees held
1.53	1.50	10.	Number of students enrolling in a program
1.53	1.53	11.	Number or percent of students withdrawing from a program
1.54	1.53	12.	Number or percent of students passing state board or licensure exams
1.54	1.52	13.	Cost of materials per total program
1.54	1.50	14.	Level of demand for program/service by students
1.61	1.63	15.	Cost of instructional personnel per program FTE
1.62	1.57	16.	Ratings of accessibility of student services by currently enrolled students
1.62	1.66	17.	Total cost of program per unduplicated headcount
1.67	1.57	18.	Ratings of program facilities/equipment by faculty/staff
1.67	1.62	19.	Ratings of program facilities/equipment by program completers
1.68	1.63	20.	Ratings of ease of use of student services by currently enrolled students
1.68	1.63	21.	Job satisfaction ratings by program completers
1.68	1.69	22.	Number or percent of full-time faculty/staff by number of students per term
1.68	1.61	23.	Ratings of program instructional strategies by faculty/staff
1.69	1.72	24.	Number or percent of full-time faculty/staff by years taught/service
1.69	1.65	25.	Ratings of usefulness of student services by currently enrolled students
1.69	1.73	26.	Number or percent of full-time faculty/ staff by average class size
1.69	1.71	27.	Number or percent of full-time faculty/staff by number of student contact hours per term
1.69	1.70	28.	Cost of program administration per total program
1.71	1.70	29.	Cost of support services per total program.
1.72	1.74	30.	Number or percent of full-time faculty/staff by number of course hours per term
1.73	1.77	31.	Cost of instructional personnel per program unduplicated headcount

APPENDIX E (continued)

Means			Program Characteristics
N 450	N 315		
1.73	1.75	32.	Number or percent of full-time faculty/staff by length of service in program
1.73	1.73	33.	Number or percent of part-time faculty/staff by degrees held
1.74	1.68	34.	Ratings of program staff by program completers
1.75	1.74	35.	Number or percent of program completers by type of license, certificate, or registration received
1.75	1.67	36.	Ratings of accessibility of student services by program completers
1.75	1.77	37.	Number of support staff per total program
1.76	1.67	38.	Ratings of program administration by faculty/staff
1.76	1.69	39.	Ratings of usefulness of student services by program completers
1.76	1.76	40.	Number or percent of program completers taking state board or licensure exams
1.76	1.75	41.	Cost of materials per program FTE
1.78	1.71	42.	Ratings of program instructional strategies by program completers
1.78	1.79	43.	Ratio of part-time to full-time faculty/staff
1.78	1.73	44.	Cost of equipment maintenance per total program
1.78	1.70	45.	Ratings by accreditation agencies
1.79	1.84	46.	Number or percent of full-time faculty/staff by productivity ratio
1.79	1.82	47.	Number or percent of full-time faculty/staff by rate of faculty/staff turnover
1.79	1.80	48.	Cost of materials per program unduplicated headcount
1.80	1.82	49.	Number or percent of part-time faculty/staff by average class size
1.80	1.72	50.	Ratings of ease of use of student services by program completers
1.81	1.81	51.	Equipment utilization per total program
1.81	1.75	52.	Ratings of a program curriculum by faculty/staff
1.82	1.75	53.	Ratings of support services by faculty/staff
1.83	1.78	54.	Ratings by certification boards
1.84	1.83	55.	Program admission requirements
1.84	1.84	56.	Number or percent of part-time faculty/staff by number of students per term
1.84	1.78	57.	Number or percent of program completers holding jobs for which trained
1.85	1.90	58.	Number or percent of full-time faculty/staff by certification/rank
1.85	1.85	59.	Ratings of program facilities/equipment by currently enrolled students
1.85	1.83	60.	Ratings of support services by program completers
1.86	1.85	61.	Ratings of support services by currently enrolled students

APPENDIX E (continued)

Means N 450	Means N 315		Program Characteristics
1.87	1.83	62.	Level of demand for program/service in state
1.88	1.90	63.	Cost of program administration per program FTE
1.88	1.83	64.	Number/types of changes as a result of program evaluation
1.89	1.81	65.	Ratings of program staff by faculty/staff
1.89	1.85	66.	Ratings of program staff by currently enrolled students
1.90	1.90	67.	Number or percent of full-time faculty/staff by level of use of alternative instructional methods
1.90	1.91	68.5	Number or percent of full-time faculty/staff by level of participation in program decision making
1.90	1.90	68.5	Cost of support services per program FTE
1.90	1.92	70.	Number or percent of part-time faculty/staff by number of student contact hours per term
1.90	1.95	71.	Number or percent of part-time faculty/staff by productivity ratio
1.90	1.90	72.	Cost of space utilized per total program
1.90	1.94	73.	Space utilization per total program
1.91	1.86	74.	Number or percent of entering students by types of developmental or remedial assistance desired
1.92	1.92	75.	Cost of support services per program unduplicated headcount
1.92	1.92	76.	Number or percent of entering students by type of handicap
1.92	1.91	77.	Number or percent of entering students by academic skills level as measured by local instruments
1.94	1.92	78.	Number or percent of entering students by major area of study
1.94	1.98	79.	Cost of program administration per program unduplicated headcount
1.95	1.97	80.	Number or percent of full-time faculty/staff by number of FTE per term
1.95	1.91	81.	Ratings of program instructional strategies by currently enrolled students
1.95	1.92	82.	Number or percent of currently enrolled students by major area of study
1.96	1.97	83.	Number or percent of program completers by average time taken for completion of a program
1.97	1.93	84.	Number/types of changes as a result of accreditation studies
1.97	1.97	85.	Number or percent of part-time faculty/staff by years taught/service
1.98	1.93	86.	Number or percent of currently enrolled students by types of developmental or remedial assistance desired
1.98	1.98	87.	Number or percent of part-time faculty/staff by number of course hours taught per term
1.98	1.97	88.	Number or percent of currently enrolled students by average GPA of students in program

Means			Program Characteristics
N 450	N 315		
1.99	1.95	89.	Cost of equpiment maintenance per program FTE
1.99	2.00	90.	Number or percent of part-time faculty/staff by length of service in a program
1.99	1.95	91.	Number or percent of currently enrolled students by percent of total college FTE in program
2.00	1.99	92.	Number or percent of currently enrolled students by number of hours with failing grade
2.00	1.97	93.	Number or percent of currently enrolled students by cumulative GPA categories for program-related coursework
2.00	1.98	94.	Ratings of a program curriculum by currently enrolled students
2.01	2.03	95.	Number of support staff per program FTE
2.01	2.00	96.	Equipment utilization per program unduplicated headcount
2.02	2.03	97.	Number of library holdings per total program
2.02	2.01	98.	Number or percent of currently enrolled students by type of handicap
2.03	2.04	99.	Number of support staff per program unduplicated headcount
2.03	1.97	100.	Ratings of program administration by program completers
2.03	2.02	101.	Equipment utilization per program FTE
2.03	2.03	102.	Number or percent of entering students by level of previous academic achievement
2.03	2.06	103.	Number or percent of part-time faculty/staff by certification/rank
2.04	2.01	104.	Number or percent of currently enrolled students by percent of total college unduplicated headcount in program
2.04	1.99	105.	Ratings of usefulness of student services by faculty/staff
2.05	2.03	106.	Number or percent of part-time faculty/staff by level of use of alternative instructional methods
2.05	2.13	107.	Number or percent of full-time faculty/staff by level of compensation
2.05	2.06	108.	Number or percent of currently enrolled students by academic skills level as measured by local instruments

APPENDIX F

CORRELATION COEFFICIENTS FOR INTERCORRELATIONS OF PROGRAM CHARACTERISTICS FOR N=450

Program Characteristics	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	.23	1.00													
3	.15	.34	1.00												
4	.25	.38	.33	1.00											
5	.23	.28	.40	.29	1.00										
6	.72	.30	.22	.30	.28	1.00									
7	.64	.22	.25	.23	.19	.51	1.00								
8	.19	.28	.40	.23	.30	.12	.19	1.00							
9	.25	.24	.21	.31	.17	.27	.10	.15	1.00						
10	.23	.10	.15	.41	.21	.12	.19	.21	.20	1.00					
11	.22	.30	.34	.63	.26	.21	.24	.22	.33	.30	1.00				
12	.16	.24	.36	.42	.21	.24	.25	.20	.22	.20	.36	1.00			
13	.63	.22	.15	.21	.15	.59	.42	.22	.24	.20	.16	.13	1.00		
14	.23	.25	.34	.18	.35	.15	.18	.74	.16	.22	.18	.15	.24	1.00	
15	.51	.26	.31	.28	.27	.73	.74	.16	.25	.13	.25	.28	.40	.13	1.00

APPENDIX F (continued)

Program Characteristics	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
16	1.00														
17	.14	1.00													
18	.29	.07	1.00												
19	.20	.13	.42	1.00											
20	.93	.12	.28	.20	1.00										
21	.22	.13	.16	.25	.23	1.00									
22	.20	.35	.20	.25	.17	.22	1.00								
23	.29	.10	.71	.27	.29	.16	.21	1.00							
24	.15	.26	.10	.18	.14	.20	.47	.16	1.00						
25	.89	.17	.31	.22	.84	.23	.22	.31	.15	1.00					
26	.18	.40	.19	.18	.15	.20	.80	.23	.42	.20	1.00				
27	.19	.35	.20	.28	.18	.25	.80	.19	.46	.23	.72	1.00			
28	.18	.45	.16	.21	.16	.12	.32	.16	.26	.21	.28	.31	1.00		
29	.15	.39	.18	.18	.12	.09	.27	.13	.20	.18	.25	.27	.74	1.00	
30	.19	.31	.15	.23	.18	.24	.64	.18	.47	.23	.57	.65	.28	.23	1.00

APPENDIX F (continued)

Program Characteristics	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
31	1.00														
32	.34	1.00													
33	.27	.37	1.00												
34	.15	.20	.20	1.00											
35	.23	.22	.26	.19	1.00										
36	.17	.20	.16	.40	.17	1.00									
37	.32	.29	.19	.20	.15	.23	1.00								
38	.16	.16	.17	.48	.18	.26	.24	1.00							
39	.17	.18	.16	.45	.17	.88	.26	.30	1.00						
40	.25	.20	.31	.18	.81	.17	.16	.15	.20	1.00					
41	.40	.24	.24	.16	.23	.12	.29	.17	.14	.23	1.00				
42	.16	.21	.13	.61	.19	.40	.19	.32	.40	.19	.14	1.00			
43	.32	.43	.39	.22	.30	.22	.25	.20	.22	.27	.25	.23	1.00		
44	.37	.23	.22	.16	.17	.19	.46	.12	.20	.22	.54	.23	.23	1.00	
45	.14	.23	.25	.22	.15	.18	.18	.22	.19	.19	.12	.17	.23	.16	1.00

APPENDIX F (continued)

Program Characteristics	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
46	1.00														
47	.42	1.00													
48	.23	.27	1.00												
49	.43	.28	.25	1.00											
50	.10	.16	.11	.14	1.00										
51	.31	.27	.44	.27	.15	1.00									
52	.13	.10	.05	.20	.26	.13	1.00								
53	.15	.20	.19	.18	.38	.25	.50	1.00							
54	.21	.21	.13	.17	.19	.23	.18	.26	1.00						
55	.25	.24	.16	.30	.22	.15	.16	.26	.32	1.00					
56	.45	.33	.27	.77	.20	.26	.23	.18	.22	.32	1.00				
57	.16	.27	.05	.18	.17	.17	.13	.14	.21	.19	.22	1.00			
58	.31	.31	.27	.26	.09	.23	.01	.04	.16	.20	.23	.11	1.00		
59	.19	.19	.15	.20	.20	.15	.33	.28	.23	.22	.22	.19	.07	1.00	
60	.15	.24	.17	.18	.62	.23	.23	.40	.19	.22	.22	.22	.11	.29	1.00

APPENDIX F (continued)

Program Characteristics	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
61	1.00														
62	.22	1.00													
63	.18	.24	1.00												
64	.22	.32	.20	1.00											
65	.27	.13	.08	.23	1.00										
66	.46	.23	.18	.28	.40	1.00									
67	.16	.18	.18	.29	.15	.24	1.00								
68	.14	.22	.22	.24	.12	.18	.49	1.00							
69	.17	.14	.74	.17	.08	.13	.15	.17	1.00						
70	.22	.17	.35	.27	.20	.24	.24	.31	.34	1.00					
71	.13	.24	.21	.24	.22	.21	.29	.31	.36	.47	1.00				
72	.08	.19	.53	.12	.07	.06	.18	.24	.49	.27	.27	1.00			
73	.16	.16	.42	.15	.17	.14	.28	.23	.42	.24	.28	.60	1.00		
74	.34	.17	.23	.24	.22	.30	.28	.18	.23	.25	.21	.13	.15	1.00	
75	.13	.17	.60	.18	.12	.05	.16	.17	.75	.27	.24	.57	.46	.19	1.00

APPENDIX F (continued)

Program Characteristics	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
76	1.00														
77	.28	1.00													
78	.32	.36	1.00												
79	.14	.17	.08	1.00											
80	.14	.28	.24	.26	1.00										
81	.21	.26	.19	.07	.15	1.00									
82	.33	.40	.85	.14	.27	.20	1.00								
83	.06	.27	.22	.20	.26	.12	.28	1.00							
84	.14	.24	.16	.27	.22	.28	.21	.21	1.00						
85	.12	.13	.10	.21	.20	.17	.10	.09	.15	1.00					
86	.41	.50	.28	.18	.22	.32	.36	.22	.27	.20	1.00				
87	.13	.25	.22	.24	.46	.19	.26	.28	.29	.29	.30	1.00			
88	.09	.31	.21	.28	.31	.16	.21	.46	.22	.23	.31	.30	1.00		
89	.14	.17	.09	.46	.30	.13	.12	.16	.21	.21	.28	.33	.20	1.00	
90	.10	.16	.16	.25	.27	.19	.16	.15	.20	.74	.20	.34	.21	.23	1.00

APPENDIX F (continued)

Program Characteristics	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
91	1.00														
92	.22	1.00													
93	.20	.61	1.00												
94	.13	.14	.15	1.00											
95	.23	.12	.10	.12	1.00										
96	.27	.20	.22	.07	.47	1.00									
97	.19	.23	.24	.05	.34	.40	1.00								
98	.16	.33	.28	.16	.07	.14	.06	1.00							
99	.21	.18	.17	.08	.76	.63	.35	.08	1.00						
100	.17	.15	.21	.24	.16	.17	.18	.11	.15	1.00					
101	.27	.13	.13	.14	.57	.77	.37	.14	.46	.16	1.00				
102	.20	.50	.52	.19	.22	.17	.17	.34	.22	.09	.15	1.00			
103	.23	.19	.19	.05	.18	.16	.21	.09	.15	.14	.17	.15	1.00		
104	.81	.19	.18	.13	.18	.27	.12	.12	.22	.15	.22	.17	.16	1.00	
105	.17	.09	.09	.27	.20	.15	.26	.09	.19	.17	.18	.13	.03	.15	1.00

APPENDIX F (continued)

Program Characteristics	106	107	108
106	1.00		
107	.15	1.00	
108	.20	.21	1.00

APPENDIX G

CORRELATION COEFFICIENTS FOR INTERCORRELATIONS OF PROGRAM CHARACTERISTICS FOR N=315

Program Characteristics	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00														
2	.20	1.00													
3	.16	.40	1.00												
4	.28	.39	.41	1.00											
5	.26	.26	.35	.34	1.00										
6	.77	.25	.26	.32	.29	1.00									
7	.68	.19	.28	.23	.18	.55	1.00								
8	.21	.28	.36	.25	.27	.16	.19	1.00							
9	.22	.23	.21	.37	.15	.28	.21	.10	1.00						
10	.29	.09	.12	.43	.22	.16	.22	.22	.23	1.00					
11	.27	.39	.41	.65	.33	.26	.28	.23	.37	.33	1.00				
12	.18	.27	.40	.44	.22	.24	.26	.23	.23	.20	.40	1.00			
13	.66	.18	.11	.23	.16	.60	.43	.19	.23	.24	.20	.10	1.00		
14	.27	.26	.26	.21	.34	.20	.18	.72	.12	.24	.21	.19	.26	1.00	
15	.57	.24	.36	.29	.24	.74	.75	.18	.25	.15	.29	.28	.40	.16	1.00

APPENDIX G (continued)

Program Characteristics	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
16	1.00														
17	.22	1.00													
18	.27	.09	1.00												
19	.22	.11	.40	1.00											
20	.94	.20	.27	.24	1.00										
21	.22	.18	.13	.24	.24	1.00									
22	.19	.38	.16	.24	.15	.28	1.00								
23	.24	.09	.66	.22	.25	.15	.21	1.00							
24	.13	.29	.09	.18	.12	.23	.47	.18	1.00						
25	.88	.23	.31	.24	.84	.24	.21	.30	.13	1.00					
26	.16	.46	.15	.16	.13	.25	.80	.20	.43	.20	1.00				
27	.18	.37	.20	.27	.16	.30	.79	.17	.47	.24	.71	1.00			
28	.23	.46	.15	.17	.22	.12	.32	.11	.24	.25	.29	.32	1.00		
29	.23	.42	.16	.10	.22	.08	.25	.11	.21	.23	.27	.26	.73	1.00	
30	.15	.32	.16	.17	.12	.28	.65	.19	.47	.19	.60	.65	.32	.25	1.00

APPENDIX G (continued)

Program Characteristics	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
31	1.00														
32	.38	1.00													
33	.27	.40	1.00												
34	.11	.17	.13	1.00											
35	.27	.25	.30	.17	1.00										
36	.20	.21	.16	.46	.22	1.00									
37	.33	.28	.18	.17	.18	.25	1.00								
38	.16	.12	.12	.45	.18	.26	.18	1.00							
39	.20	.17	.16	.47	.21	.88	.24	.31	1.00						
40	.28	.20	.32	.14	.81	.21	.19	.13	.22	1.00					
41	.43	.22	.21	.10	.22	.15	.31	.14	.18	.23	1.00				
42	.11	.20	.07	.56	.23	.42	.13	.26	.40	.21	.08	1.00			
43	.34	.47	.40	.13	.34	.22	.20	.18	.20	.29	.27	.17	1.00		
44	.34	.21	.16	.08	.16	.20	.47	.06	.18	.21	.51	.14	.17	1.00	
45	.16	.25	.19	.19	.16	.14	.11	.16	.10	.19	.20	.16	.17	.15	1.00

APPENDIX G (continued)

Program Characteristics	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
46	1.00														
47	.43	1.00													
48	.25	.25	1.00												
49	.48	.32	.26	1.00											
50	.12	.15	.14	.16	1.00										
51	.34	.25	.44	.25	.11	1.00									
52	.14	.14	.09	.16	.24	.09	1.00								
53	.15	.21	.23	.21	.41	.26	.48	1.00							
54	.18	.17	.14	.16	.16	.21	.14	.25	1.00						
55	.29	.28	.22	.32	.23	.13	.09	.20	.32	1.00					
56	.49	.37	.26	.77	.19	.23	.17	.18	.20	.32	1.00				
57	.17	.28	.00	.19	.20	.07	.14	.15	.16	.19	.20	1.00			
58	.35	.37	.28	.28	.08	.22	.03	.08	.14	.26	.25	.11	1.00		
59	.16	.16	.14	.16	.21	.13	.28	.25	.18	.16	.18	.14	.05	1.00	
60	.12	.21	.16	.20	.61	.15	.22	.42	.13	.20	.21	.20	.09	.25	1.00

APPENDIX G (continued)

Program Characteristics	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
61	1.00														
62	.17	1.00													
63	.21	.25	1.00												
64	.22	.32	.21	1.00											
65	.24	.15	.07	.15	1.00										
66	.42	.24	.18	.24	.35	1.00									
67	.17	.20	.22	.29	.12	.25	1.00								
68	.13	.23	.23	.30	.11	.18	.49	1.00							
69	.22	.12	.74	.19	.08	.13	.18	.17	1.00						
70	.23	.15	.35	.24	.17	.23	.23	.29	.34	1.00					
71	.10	.26	.20	.25	.24	.19	.31	.31	.23	.48	1.00				
72	.09	.22	.54	.15	.09	.03	.18	.19	.49	.25	.23	1.00			
73	.16	.19	.41	.10	.16	.07	.26	.19	.40	.23	.27	.60	1.00		
74	.29	.15	.25	.21	.14	.28	.31	.20	.25	.23	.21	.13	.16	1.00	
75	.18	.20	.59	.22	.11	.05	.17	.15	.74	.25	.23	.56	.43	.21	1.00

APPENDIX G (continued)

Program Characteristics	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
76	1.00														
77	.29	1.00													
78	.31	.40	1.00												
79	.17	.24	.14	1.00											
80	.11	.26	.24	.30	1.00										
81	.20	.26	.20	.05	.11	1.00									
82	.32	.42	.84	.21	.27	.20	1.00								
83	.10	.28	.25	.24	.29	.13	.30	1.00							
84	.17	.22	.17	.32	.21	.29	.21	.21	1.00						
85	.12	.12	.07	.17	.18	.12	.07	.07	.11	1.00					
86	.40	.52	.35	.22	.21	.32	.43	.27	.25	.18	1.00				
87	.04	.25	.21	.27	.41	.22	.24	.28	.22	.27	.27	1.00			
88	.14	.37	.28	.31	.33	.21	.28	.50	.24	.27	.33	.33	1.00		
89	.07	.16	.10	.47	.27	.08	.13	.16	.19	.19	.26	.31	.20	1.00	
90	.12	.16	.14	.23	.35	.20	.14	.13	.17	.76	.22	.34	.25	.19	1.00

APPENDIX G (continued)

Program Characteristics	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
91	1.00														
92	.26	1.00													
93	.24	.62	1.00												
94	.14	.10	.13	1.00											
95	.27	.11	.09	.11	1.00										
96	.31	.20	.27	.05	.41	1.00									
97	.24	.21	.25	.01	.32	.41	1.00								
98	.18	.32	.29	.16	.04	.13	.02	1.00							
99	.24	.16	.17	.04	.76	.61	.34	.07	1.00						
100	.17	.12	.14	.27	.13	.15	.17	.05	.12	1.00					
101	.28	.14	.15	.12	.54	.75	.37	.13	.44	.14	1.00				
102	.24	.51	.52	.12	.22	.19	.14	.33	.22	.08	.15	1.00			
103	.31	.19	.15	.04	.19	.17	.23	.09	.16	.10	.16	.16	1.00		
104	.81	.22	.22	.16	.19	.32	.17	.13	.22	.13	.27	.21	.23	1.00	
105	.15	.11	.11	.28	.21	.17	.24	.08	.24	.20	.17	.11	.07	.16	1.00

APPENDIX G (continued)

Program Characteristics	106	107	108
106	1.00		
107	.14	1.00	
108	.21	.19	1.00

APPENDIX H
Principal Axes Solution Based Upon N=450 With
Final Communality Estimates and Eigenvalues

Program Characteristics	1	2	3	4	5	6	7	8	9	10	11
1	.57	-.30	.15	.04	-.08	-.07	-.23	.03	.08	.10	-.24
2	.50	.24	.06	-.16	-.28	.13	.12	.21	-.22	.11	-.14
3	.46	.23	-.06	.10	-.24	.23	.01	-.17	.03	-.00	-.11
4	.53	.18	-.18	.19	-.22	.13	-.08	.25	.01	-.04	.12
5	.48	.22	-.05	-.04	-.02	.24	-.03	-.26	.13	.01	-.12
6	.57	-.35	.07	-.04	-.16	.03	-.20	.09	.07	.01	-.38
7	.56	-.24	.08	.08	-.08	-.07	-.37	-.02	.05	.17	-.13
8	.41	.23	.10	.12	-.19	.16	.12	-.36	.12	.21	.04
9	.51	.00	-.34	-.04	.04	-.21	.25	.16	.17	-.08	-.13
10	.35	.09	-.14	.18	.07	.09	-.10	.14	.18	.16	.31
11	.48	.20	-.17	.22	-.17	-.00	-.08	.15	.00	-.04	.10
12	.43	.14	-.30	.28	-.34	.21	-.12	.16	.08	-.18	.10
13	.58	-.40	.20	.02	-.04	.02	-.04	.03	-.03	-.01	-.12
14	.43	.21	.14	.09	-.10	.18	.19	-.36	.17	.22	.03
15	.60	-.31	.04	.04	-.12	.03	-.33	.02	.08	.12	-.23
16	.47	.46	.33	.18	-.03	-.39	.00	-.23	.13	-.06	.07
17	.54	-.35	.05	.14	-.06	-.09	-.11	.01	.07	.17	-.17
18	.42	.32	.31	-.28	.18	.21	-.15	.24	.16	-.17	-.00
19	.45	.28	.17	-.22	-.21	.10	.08	.27	-.30	.14	.02
20	.44	.45	.34	.15	-.06	-.39	.02	-.21	.14	-.06	.05
21	.42	.23	-.11	.04	-.26	.20	.04	-.13	-.01	.02	-.16
22	.67	-.08	-.32	-.28	-.01	-.14	-.19	-.17	-.15	-.03	.13
23	.44	.31	.21	-.28	.27	.14	-.15	.25	.25	-.15	-.12
24	.53	-.10	-.33	-.18	.11	-.21	.33	.09	.15	.14	-.06
25	.50	.43	.34	.15	.00	-.36	-.03	-.21	.10	-.03	.09
26	.62	-.11	-.33	-.26	.00	-.18	-.22	-.15	-.06	-.09	.09
27	.64	-.08	-.30	-.28	-.01	-.20	-.15	-.13	-.12	-.02	.07
28	.59	-.42	.29	.05	-.13	.02	-.02	.00	-.00	.00	-.11
29	.55	-.46	.33	.03	-.06	.02	.01	-.00	-.06	-.11	-.05
30	.61	-.04	-.34	-.13	-.01	-.15	-.06	-.08	-.10	-.10	.02
31	.60	-.41	.01	.09	-.10	.01	-.06	.09	.08	.15	-.25
32	.57	-.06	-.31	-.17	.13	-.20	.37	.09	.12	.10	-.06
33	.46	.01	-.29	-.06	-.05	-.08	.14	.20	.26	-.05	-.14
34	.46	.35	.20	-.24	-.14	.12	.15	.24	-.30	.16	-.03
35	.46	.14	-.25	.26	-.31	.29	-.12	.19	.07	-.17	.14
36	.48	.41	.36	.08	-28	-.41	.10	.04	-.08	-.01	-.02
37	.53	-.24	.25	-.06	.07	-.02	.15	.03	.00	-.21	.08
38	.45	.34	.26	-.30	.18	.19	-.14	.24	.14	-.09	-.06
39	.50	.40	.37	.07	-.30	-.40	.08	.04	-.12	-.04	-.01
40	.48	.14	-.27	.32	-.36	.25	-.11	.17	.09	-.15	.15
41	.56	-.37	.16	.07	.02	.06	-.17	-.00	.00	.15	.02
42	.44	.29	.13	-.20	-.14	.16	.14	.15	-.32	.15	-.09
43	.56	.03	-.26	-.06	.01	-.08	.05	.05	.04	-.06	-.02
44	.55	-.40	.25	.06	-.04	.05	.03	-.00	-.06	=.11	-.02

APPENDIX H (extended)

12	13	14	15	16	17	18	19	20	21	Final Communalities
.14	.18	.04	-.13	.07	.02	-.06	-.11	-.08	.06	.68
.02	-.07	-.04	-.04	-.02	.04	-.02	.06	-.03	-.06	.59
-.09	-.16	.03	.07	-.17	.14	-.08	.01	-.11	.05	.54
.06	.04	.03	.08	.05	.05	-.15	.10	-.06	-.04	.59
.02	.02	-.13	.07	.14	-.10	-.18	.07	-.09	.08	.55
.05	.21	.10	.03	.01	.10	-.15	-.04	.01	.09	.80
-.06	-.14	.11	-.17	-.07	-.00	-.11	.03	.08	-.03	.68
.14	.07	.17	-.04	-.15	.03	.11	.02	-.23	-.18	.69
.12	-.14	.09	-.12	.01	.07	.05	.07	-.00	-.01	.63
.31	.04	.03	.04	.09	.03	-.11	.00	-.01	-.04	.51
-.00	-.01	.01	.01	.09	.08	-.13	.03	-.07	-.02	.46
-.30	.11	.11	.02	-.02	-.10	.19	-.01	.05	.11	.80
.23	.09	.24	.03	.04	-.17	.11	-.23	-.10	.00	.78
.17	.10	.11	-.03	-.11	-.00	.10	-.02	-.16	-.15	.66
-.15	-.11	.09	-.06	-.17	.11	-.19	.11	.11	.03	.80
-.14	.02	.11	-.10	.03	.05	-.02	.01	.03	.05	.85
.13	.17	-.21	-.26	-.06	.01	.10	-.01	-.09	.19	.75
.08	.01	.03	.00	-.09	-.02	.02	.07	-.01	.02	.69
.07	-.07	-.04	.04	-.00	-.04	-.05	.01	.02	.05	.63
-.15	.01	.10	-.05	.00	.02	-.02	.04	-.01	.04	.80
-.13	-.09	.03	.14	-.14	.16	-.02	.02	-.09	.07	.50
.09	-.02	-.06	-.06	-.07	-.07	.05	.00	-.02	-.03	.79
.04	.06	.03	.02	-.08	-.01	-.01	.10	-.11	-.04	.72
-.14	.11	.04	.00	-.18	-.08	-.04	-.09	.12	-.05	.76
-.12	.03	.11	-.10	.04	.07	.02	.01	.05	.04	.82
.09	-.02	-.07	-.07	.01	-.00	.06	-.05	-.11	.06	.73
.08	-.04	-.08	-.01	-.06	-.02	.12	.06	.10	.04	.74
.05	.17	-.02	.14	.17	.01	.01	-.02	.17	-.18	.79
-.00	.11	-.03	.19	.22	.06	-.07	-.09	.12	-.10	.68
.11	.06	.04	-.01	-.04	-.04	.10	.11	.11	.00	.62
-.01	.18	-.22	-.11	-.15	.08	.00	.11	-.04	.20	.82
-.15	.10	.02	.02	-.14	-.09	.03	-.13	.12	-.06	.77
.01	-.27	.05	.05	.09	-.00	.01	.00	-.02	.02	.54
.06	-.10	-.05	.01	.00	.04	.07	.01	.03	-.07	.68
-.24	.10	.10	-.01	.03	-.12	.16	-.02	.02	.07	.78
.03	.02	-.04	.04	-.05	-.09	-.16	.00	-.05	.07	.85
-.10	.05	-.07	.07	.13	.09	-.05	-.08	-.09	-.14	.57
.12	.07	-.01	.00	-.11	.03	.13	.15	.01	-.08	.73
.04	.02	-.02	.04	-.05	-.02	-.07	.04	-.01	.01	.84
-.23	.07	.13	.07	.03	-.08	.21	-.03	.06	.04	.85
-.01	-.29	.29	-.07	-.15	-.16	.10	-.01	.01	-.07	.77
.08	.02	.02	.05	.00	-.06	-.06	-.04	-.09	-.07	.59
.05	-.04	.05	-.10	.02	-.06	-.07	.06	.06	-.03	.44
.14	-.05	.28	.14	.07	-.16	.02	-.16	-.04	-.03	.73

APPENDIX H (continued)

Program Characteristics	1	2	3	4	5	6	7	8	9	10	11
45	.39	.19	-.02	-.01	-.04	.27	.25	-.26	.20	-.17	-.14
46	.56	-.10	-.25	-.24	-.02	-.01	-.02	-.19	-.04	-.02	.10
47	.53	.03	-.20	-.11	-.03	-.01	.15	.03	-.06	-.00	.03
48	.55	-.46	.13	.16	.02	.04	.07	.05	.01	.15	-.01
49	.59	-.10	-.26	-.27	-.07	-.11	-.32	-.15	-.01	-.06	.10
50	.44	.40	.38	.08	-.27	-.41	.12	.03	-.05	-.03	-.02
51	.56	-.34	.23	-.04	.14	.12	.26	.00	-.16	-.25	.15
52	.38	.33	.23	-.26	.17	.17	-.25	.19	.23	-.10	-.08
53	.47	.26	.37	-.11	.18	-.04	-.10	.05	.27	-.23	.05
54	.41	.19	.02	.04	-.11	.26	.20	-.23	.19	-.20	-.13
55	.49	.22	-.16	.18	-.03	.14	.05	-.20	.08	-.04	-.04
56	.63	-.06	-.27	-.29	-.10	-.07	-.28	-.17	-.14	-.02	.10
57	.35	.21	-.06	.09	-.16	.14	-.05	.11	-.18	-.15	.03
58	.42	-.09	-.38	-.05	-.00	-.22	.34	.10	.08	.03	-.17
59	.44	.33	.13	-.08	.20	.15	-.08	-.08	-.07	.32	.10
60	.47	.30	.32	-.04	-.21	-.26	.07	.13	-.25	-.01	.05
61	.46	.38	.28	.06	.10	-.26	-.08	-.10	-.01	.08	.12
62	.43	.17	.04	.05	-.19	.17	.16	-.22	.10	.14	.02
63	.59	-.42	.26	.12	-.06	-.00	-.11	-.01	-.00	.20	-.03
64	.45	.17	.00	-.01	.00	.33	.12	-.37	.08	.03	-.08
65	.38	.28	.24	-.35	.27	.18	-.09	.22	.20	-.10	-.02
66	.45	.39	.15	-.11	.20	.19	-.02	.00	-.16	.30	.03
67	.49	.06	-.22	-.08	.19	.12	.13	-.03	-.25	-.06	.05
68	.48	.01	-.19	-.13	-.03	-.00	.15	-.04	-.13	-.02	.02
69	.54	-.44	.27	.07	.01	.02	-.11	-.04	-.03	.07	.06
70	.61	-.08	-.24	-.30	-.07	-.12	-.27	-.17	-.10	.01	.07
71	.49	-.08	-.24	-.25	-.00	.04	-.07	-.19	.02	-.00	.12
72	.52	-.49	.22	.08	-.06	.05	.04	-.00	-.11	-.08	-.03
73	.53	-.35	.23	-.01	.06	.06	.15	-.05	-.13	-.19	.06
74	.52	.21	-.11	.29	.38	-.08	-.13	.01	-.01	.01	-.09
75	.55	-.50	.28	.14	.03	.04	.06	.01	.00	.01	.04
76	.29	.09	-.11	.38	.49	-.08	-.01	-.04	-.21	.12	-.07
77	.48	.21	-.12	.26	.25	-.06	-.13	.03	-.13	-.17	-.17
78	.32	.19	-.29	.28	.16	-.01	.02	.00	-.17	-.06	.05
79	.57	-.48	.24	.17	-.03	.02	.02	.01	.03	.10	-.00
80	.56	-.09	-.32	-.19	-.01	-.17	-.13	-.07	-.06	-.04	.07
81	.43	.33	.05	-.10	.19	.22	-.01	-.10	-.13	.27	-.06
82	.39	.21	-.24	.32	.16	-.01	.01	.01	-.19	-.08	.01
83	.43	.09	-.22	.18	-.23	.12	-.12	.13	-.01	-.09	.16
84	.49	.13	-.00	.06	.00	.33	.22	-.33	.09	-.10	-.10
85	.45	-.05	-.20	-.19	.09	-.14	.22	.13	.29	.21	-.05
86	.53	.21	-.06	.25	.38	-.06	-.10	.01	-.01	-.04	-.10
87	.57	.02	-.24	-.15	-.07	-.11	-.19	-.09	-.02	-.08	-.01
88	.52	.07	-.22	.22	-.14	.03	.00	.21	.11	.02	.13
89	.55	-.39	.12	.06	.04	.06	-.05	-.01	-.08	.05	.04
90	.47	-.06	-.21	-.18	.06	-.14	.26	.11	.23	.16	-.06
91	.48	-.03	-.10	.18	.05	-.02	.02	.19	.30	.26	.37
92	.45	.12	-.18	.33	.17	.03	-.00	.09	-12	-.03	-.12
93	.47	.17	-.17	.29	.05	-.00	.05	.15	-.13	-.04	-.14
94	.36	.34	.15	-.13	.15	.14	-.18	-.03	.05	.27	.02

APPENDIX H (extended)

12	13	14	15	16	17	18	19	20	21	Final Communalities
.21	-.20	-.09	-.02	-.11	.10	-.08	-.06	.31	.10	.71
-.08	.26	.08	.09	-.00	.31	-.02	.02	-.01	-.02	.67
-.02	.21	.06	-.14	-.08	.02	.07	.10	.05	-.08	.46
.14	.03	-.05	-.16	-.08	-.16	.25	-.03	-.14	.16	.77
.02	-.11	-.10	.05	.10	-.05	-.06	.12	-.16	.04	.74
.00	-.00	-.04	.07	-.06	-.11	-.13	.03	-.10	.06	.83
.10	-.04	.13	-.06	-.02	.11	-.12	-.13	.07	.20	.82
.02	.02	-.02	.02	-.01	-.02	-.01	.03	-.06	.03	.61
.06	.04	.04	-.02	.01	-.16	.10	.01	.09	-.06	.67
.12	-.21	-.06	.01	-.03	.16	-.03	-.05	.27	.10	.66
.04	-.03	-.15	.06	.15	-.16	-.02	.04	.03	-.05	.50
.06	-.16	-.13	.13	.02	-.12	-.09	-.04	-.09	.02	.80
-.09	-.08	.08	.00	-.06	.11	-.01	.06	-.03	-.03	.34
.08	-.15	.14	-.18	.37	.14	.13	.20	-.08	.07	.84
-.18	-.07	.04	-.09	.10	.07	.12	-.16	.09	.13	.63
.09	.02	-.08	.05	.05	-.03	.09	.01	.07	.05	.65
-.04	.02	.04	-.08	.14	.03	.15	-.06	.08	.09	.61
.08	.06	-.01	-.02	-.12	.09	.09	.06	-.11	-.14	.47
-.13	-.12	-.04	.00	.03	.01	.03	.19	.21	-.21	.83
-.01	.05	-.11	.03	.18	-.25	-.03	.12	-.05	.01	.63
.04	.08	-.04	.06	-.01	.08	.10	.04	-.04	.05	.65
-.10	-.08	.02	-.09	.13	.13	.10	-.19	.07	.04	.69
-.07	.28	.16	-.36	.01	-.20	-.22	.13	.12	-.03	.80
-.06	.21	.09	-.12	-.06	-.04	-.04	.08	.06	-.10	.42
-.21	-.18	-.06	.04	.03	.05	-.06	.10	.11	-.13	.72
.00	-.03	-.15	.16	.03	-.04	.00	-.01	.03	.07	.74
-.15	.22	.05	.14	.05	.28	-.08	-.03	-.06	-.01	.61
.07	.14	.18	.20	.09	.07	-.03	-.11	.03	-.05	.71
.05	.05	.17	.03	-.04	.15	-.06	-.07	.01	.16	.64
-.03	-.04	.02	.02	.04	.02	-.06	.03	-.14	-.15	.63
-.06	.07	-.28	.05	.04	.02	.04	.04	.00	.02	.76
.04	.10	.14	.34	-.06	-.01	.03	.26	.04	.17	.81
.02	-.06	-.13	-.17	.02	.04	-.03	-.22	-.02	-.18	.66
.13	-.03	-.06	.08	-.09	.09	.12	-.11	.06	-.06	.44
-.04	.09	-.27	.00	.03	-.02	.16	.12	.10	-.02	.79
.16	-.03	-.01	-.03	-.05	.06	.15	.07	.13	-.03	.60
-.16	.03	.09	-.05	.17	.05	.03	-.16	-.01	.05	.60
.20	-.01	-.06	.10	-.10	.06	.10	-.12	.06	-.05	.53
.03	-.00	-.03	.04	.12	.03	-.04	-.03	-.02	.02	.43
.12	-.02	-.16	.04	.12	-.23	.00	.07	.08	.01	.68
-.27	-.03	-.02	.24	-.13	-.14	-.14	-.16	-.01	.00	.72
.01	-.06	.02	.02	.02	.01	-.08	.03	-.16	-.14	.62
.01	-.03	-.01	.13	-.01	-.11	.04	.05	.01	-.00	.50
-.01	.03	-.10	-.16	-.02	-.00	-.08	-.03	.02	.01	.52
-.04	-.36	.24	.00	-.10	-.15	.04	.03	-.01	-.07	.72
-.24	.00	-.05	.27	-.06	-.17	-.01	-.22	-.02	.01	.69
.27	-.02	.01	.02	-.01	.07	-.19	-.00	.08	.00	.72
-.03	-.01	-.14	-.04	.01	-.08	-.05	-.08	-.02	-.00	.45
-.05	-.02	-.17	-.05	-.07	-.01	-.04	-.11	.01	.04	.48
-.22	.03	-.02	-.05	.16	.06	.05	-.10	.10	.15	.57

APPENDIX H (continued)

Program Characteristics	1	2	3	4	5	6	7	8	9	10	11
95	.50	-.30	.24	-.03	.11	.02	.08	-.02	.03	-.04	.18
96	.55	-.38	.21	.04	.18	.12	.28	.01	-.10	.13	.24
97	.49	-.14	.06	-.08	.07	.03	.20	.03	-.08	-.28	.00
98	.28	.12	-.08	.38	.48	-.05	-.02	-.02	-.23	.10	-.12
99	.51	-.35	.25	.06	.10	-.01	.20	.01	.06	-.13	.19
100	.40	.29	.14	-.21	-.10	.08	.17	.19	-.27	.22	.02
101	.54	-.31	.20	-.09	.23	.12	.13	.01	-.09	-.07	.25
102	.41	.18	-.19	.29	.27	-.04	-.03	.07	-.05	-.03	-.05
103	.40	-.08	-.31	-.05	-.02	-.14	.26	.15	.15	.04	-.19
104	.41	-.07	-.08	.19	.06	-.02	.01	.15	.32	.32	.43
105	.43	.27	.34	-.10	.10	-.16	-.10	-.07	.22	-.20	.03
106	.44	.07	-.16	-.14	.19	.22	.06	-.06	-.18	.02	.11
107	.45	-.13	-.33	-.11	.05	-.13	.10	-.05	.03	-.03	-.04
108	.47	.19	-.07	.21	.16	.00	-.11	-.01	-.10	-.17	-.16
Eigenvalues	28.36	7.73	5.52	3.48	3.04	2.95	2.56	2.30	2.25	1.92	1.72

APPENDIX H (extended)

12	13	14	15	16	17	18	19	20	21	Final Communalities
-.29	-.17	-.09	-.02	.01	.10	-.01	.13	-.09	-.18	.65
-.01	-.07	-.12	-.06	-.11	-.02	-.00	.01	-.14	.24	.82
.00	.01	.05	-.12	.04	.05	-.02	-.06	.07	-.02	.43
.05	.07	.12	.37	-.03	-.02	.03	.24	.06	.18	.81
-.23	.05	-.33	-.03	.00	.04	.10	.10	-.16	-.06	.77
.11	-.01	-.13	.09	-.02	.02	.10	.06	.05	-.08	.57
-.11	-.29	.09	-.07	-.13	.02	-.07	.07	-.07	.15	.76
-.13	-.02	-.13	-.02	-.06	.00	.02	-.08	-.11	-.05	.47
.02	-.24	.12	-.04	.43	.08	.09	.12	-.11	.05	.75
.33	.04	-.08	.01	.01	.05	-.14	-.05	.10	.01	.79
.05	.06	.02	.06	-.01	-.08	.09	-.03	.08	-.02	.56
-.11	.19	.10	-.19	.06	-.22	-.29	.09	.02	-.00	.62
-.03	.14	.05	.11	-.10	.17	.15	.01	-.09	-.07	.48
.02	-.08	-.15	-.18	-.05	.10	-.03	-.20	.03	-.16	.54
1.68	1.51	1.40	1.31	1.12	1.10	1.05	0.99	0.92	0.91	Eigenvalues

APPENDIX I

Principal Axes Solution Based Upon N=315 With Final Communality Estimates and Eigenvalues

Program Characteristics	1	2	3	4	5	6	7	8	9	10	11
1	.59	-.31	.15	-.05	-.16	.01	-.22	.09	.17	-.13	.02
2	.47	.37	.10	-.12	-.10	.20	.16	-.08	-.27	-.14	-.03
3	.47	.19	-.11	.13	-.21	.33	.01	-.03	-.02	.04	.11
4	.58	.22	-.15	.14	-.13	.11	.13	.21	-.12	-.02	-.08
5	.48	.23	-.08	.04	.05	.19	-.06	-.08	.22	.13	.13
6	.60	-.33	.05	-.15	-.18	.12	-.07	.10	.11	-.08	.19
7	.58	-.27	.09	.02	-.18	.01	-.26	.08	.05	-.28	.02
8	.39	.21	.08	.13	-.00	.36	-.00	-.18	.25	-.08	-.07
9	.50	.02	-.35	-.09	-.02	-.23	.32	.05	.01	.06	-.11
10	.41	.04	-.15	.12	.11	-.02	-.03	.22	.18	-.06	-.42
11	.57	.23	-.12	.17	-.17	.02	.06	.14	-.09	-.02	-.07
12	.46	.18	-.25	.26	-.29	.25	.16	.25	-.06	-.08	.18
13	.57	-.40	.18	-.04	.01	.02	-.06	.07	.07	.04	-.10
14	.42	.18	.13	.12	.10	.31	.03	-.22	.33	-.02	-.10
15	.62	-.32	.03	-.03	-.17	.11	-.15	.13	.03	-.26	.17
16	.48	.38	.43	.12	-.29	-.23	.01	-.18	.19	.05	.06
17	.59	-.33	.07	.07	-.10	.02	-.10	-.06	.16	-.18	-.04
18	.39	.30	.31	-.23	.26	-.06	.02	.43	.03	.00	.04
19	.40	.35	.21	-.19	.05	.17	.07	-.07	-.35	-.12	.-12
20	.45	.38	.45	.10	-.30	-.21	.07	-.18	.18	.04	.09
21	.43	.23	-.12	.04	-.17	.33	.06	-.06	-.01	.04	.19
22	.67	-.04	-.31	-.31	-.08	-.02	-.26	-.11	-.06	.13	-.09
23	.39	.29	.15	-.26	.26	-.13	.06	.41	.13	.01	.18
24	.55	-.08	-.35	-.19	.09	-.20	.33	-.20	.08	-.17	.09
25	.51	.37	.43	.07	-.23	-.23	-.05	-.15	.17	.05	.02
26	.64	-.09	-.31	-.30	-.16	-.06	-.23	-.03	.01	.13	-.10
27	.64	-.05	-.27	-.31	-.11	-.05	-.21	-.09	-.04	.11	-.08
28	.59	-.42	.30	.02	-.09	.09	.01	.00	.06	.06	-.02
29	.54	-.45	.35	.03	-.05	.01	.03	.01	-.00	.16	.05
30	.62	-.06	-.32	-.18	-.07	-.05	-.16	-.02	-.05	.12	.04
31	.66	-.35	-.01	.03	-.11	.08	.03	-.03	.07	-.18	.12
32	.58	-.03	-.35	-.16	.14	-.22	.31	-.22	.03	-.07	.13
33	.43	.01	-.31	-.10	-.10	-.18	.36	.15	.10	-.03	-.06
34	.39	.45	.22	-.18	.09	.13	.11	-.10	-.31	-.09	-.20
35	.50	.17	-.20	.25	-.18	.28	.15	.32	-.11	-.11	.14
36	.51	.43	.43	-.04	-.35	-.19	.12	-.16	-.05	.07	-.02
37	.51	-.27	.27	-.06	.04	-.06	.18	-.00	-.10	.09	.12
38	.38	.31	.24	-.27	.27	.01	.01	.37	.04	.02	.03
39	.49	.42	.44	-.05	-.36	-.16	.08	-.11	-.08	.06	-.04
40	.51	.15	-.20	.30	-.28	.30	.16	.29	-.04	-.10	.07
41	.57	-.38	.17	.04	.04	.03	-.13	.07	-.02	-.22	-.12
42	.42	.42	.10	-.10	.12	.20	.02	-.15	-.28	-.04	-.03
43	.56	.04	-.31	-.08	-.01	-.15	.05	.07	-.04	-.02	-.08

APPENDIX I (extended)

12	13	14	15	16	17	18	19	20	21	Final Communalities
.35	.06	.05	-.09	.04	-.07	.07	-.02	-.17	.04	.77
.11	.17	-.04	-.05	.05	.03	.03	.06	-.02	.00	.61
-.11	.22	.08	.16	.04	.01	.07	-.05	.10	-.06	.57
.11	-.11	.05	.15	.06	.12	-.03	-.01	-.07	-.14	.64
.03	-.01	-.06	-.09	-.00	.08	.09	-.06	-.11	-.15	.48
.36	.17	.05	.00	.10	.01	.09	-.01	-.21	.07	.83
-.03	.20	.15	-.01	-.05	.01	.03	.15	-.14	.02	.72
.14	-.03	.11	.09	-.08	-.09	.11	.04	.26	-.06	.59
.04	.22	.12	-.09	-.12	.06	-.02	-.02	-.01	-.01	.64
.09	-.21	.05	.11	.03	-.01	.10	.13	-.08	-.09	.59
.01	-.06	.05	.05	.05	.06	.01	-.06	-.09	-.08	.53
-.09	-.21	.04	-.03	-.03	-.09	-.09	-.00	.04	.10	.74
.31	.02	.17	-.20	.10	-.18	-.12	-.11	.08	.05	.78
.17	-.01	.07	-.00	-.07	-.15	.05	.08	.23	-.05	.64
-.05	.31	.10	.13	-.04	.06	.07	.14	-.15	.03	.83
-.10	-.07	.13	.03	-.17	-.07	.09	.04	-.07	.11	.87
.14	.12	-.28	-.01	-.25	-.05	.02	-.11	-.05	-.05	.75
.06	.02	-.01	.10	-.05	.02	-.10	.02	.03	-.00	.67
.05	.06	-.07	.04	.13	.01	-.17	-.10	-.08	-.04	.63
-.11	-.06	.12	.06	-.14	-.06	.09	.04	-.03	.05	.85
-.06	.19	.05	.19	.07	.04	-.01	-.04	.10	-.01	.54
-.04	-.00	-.05	-.01	-.05	-.07	-.05	.05	.05	-.05	.79
.09	.08	.03	.04	-.01	.03	.04	-.00	.09	-.11	.67
.02	.08	-.03	.05	.06	-.17	-.15	.08	-.02	.06	.78
-.09	-.06	.11	.06	-.18	-.02	.05	-.00	-.00	.12	.82
-.04	-.03	-.05	-.04	-.06	-.07	.06	-.11	.01	-.06	.75
-.11	.03	-.09	.06	-.03	.03	-.18	.04	.03	.03	.74
.22	-.11	-.06	-.09	.18	.10	-.07	.11	-.01	.09	.78
.09	-.08	-.04	-.13	.22	.09	.02	.01	-.10	.03	.76
.06	-.04	-.00	.03	-.03	.04	-.11	.07	.08	.17	.64
.12	.09	-.29	.10	-.18	.02	.03	-.08	-.06	-.03	.82
.03	.06	-.06	.00	.11	-.13	-.11	.02	-.02	.09	.78
-.09	.10	.10	-.12	-.02	.06	-.01	-.04	.00	-.06	.55
.07	.13	-.12	-.15	.12	.05	.13	.06	.09	.03	.71
-.06	-.24	.06	-.06	-.02	-.06	-.11	-.05	.03	.06	.75
.05	.03	.03	.06	-.04	-.06	-.03	.00	-.07	-.11	.87
-.02	-.20	-.03	-.13	.16	-.07	.21	.15	-.08	.10	.64
.12	.07	-.12	.03	-.08	.09	.05	.17	.13	.02	.69
.10	.04	.00	.08	-.03	.02	-.06	.02	-.01	-.08	.83
-.09	-.27	.08	0.04	.03	-.06	-.10	.02	.08	.09	.82
-.13	.17	.27	-.06	-.05	-.07	-.11	.08	.19	-.06	.78
.17	.06	.05	-.09	.15	-.08	.07	-.04	-.03	-.20	.65
-.00	-.01	.08	-.03	-.13	-.00	-.10	.07	-.09	.02	.50

APPENDIX I (continued)

Characteristics	1	2	3	4	5	6	7	8	9	10	11
44	.52	-.43	.26	.03	-.00	.04	.04	-.00	-.02	.18	-.09
45	.34	.11	-.05	.09	.20	.28	.20	-.02	.26	.31	-.13
46	.59	-.09	-.23	-.27	.02	.13	-.08	-.09	.04	.10	.12
47	.56	.11	-.26	-.11	.11	.02	.08	-.08	-.09	.01	.07
48	.58	-.41	.14	.13	.08	.02	.07	-.05	.03	-.13	-.17
49	.61	-.07	-.26	-.31	-.22	-.01	-.26	.02	.04	.11	-.07
50	.45	.42	.47	-.02	-.34	-.19	.16	-.16	-.03	.06	.01
51	.53	-.38	.20	.00	.30	-.00	.10	.00	-.23	.26	.05
52	.34	.31	.21	-.27	.16	-.03	-.07	.45	.13	-.08	.12
53	.46	.19	.38	-.16	.13	-.19	.07	.30	.14	.13	.04
54	.37	.12	.02	.12	.10	.30	.22	.07	.27	.34	-.10
55	.51	.17	-.19	.26	-.03	.11	.04	-.06	.15	.14	-.02
56	.61	-.02	-.26	-.32	-.16	.06	-.30	-.05	-.02	.12	-.08
57	.31	.27	-.07	.12	-.13	.10	-.00	.14	-.25	.08	.08
58	.44	-.06	-.38	-.07	.01	-.21	.33	-.16	-.04	-.00	-.10
59	.38	.34	.14	-.01	.29	.09	-.23	-.13	.04	-.28	-.06
60	.43	.34	.36	-.11	-.22	-.09	.04	-.08	-.20	.07	-.17
61	.45	.34	.32	-.01	-.06	-.20	-.15	-.12	.05	-.01	-.12
62	.42	.12	.05	.09	.04	.36	.07	-.07	.16	-.03	-.03
63	.62	-.39	.26	.13	-.06	.04	-.09	-.01	-.03	-.20	-.02
64	.41	.12	-.01	.11	.20	.35	-.03	-.22	.25	.14	.15
65	.32	.24	.22	-.34	.31	-.09	.05	.30	.14	.02	.09
66	.40	.41	.14	-.04	.33	.09	-.19	-.13	-.04	-.23	-.15
67	.51	.09	-.20	.00	.33	.01	-.09	-.11	-.20	-.01	.18
68	.49	.07	-.20	-.09	.10	.09	.07	-.15	-.11	.01	.12
69	.56	-.42	.28	.12	-.02	-.01	-.07	-.02	-.10	-.12	.06
70	.59	-.06	-.20	-.34	-.17	.01	-.29	-.07	.01	.08	-.04
71	.52	-.06	-.24	-.28	.02	.11	-.10	-.05	.06	.04	.14
72	.52	-.47	.25	.05	-.01	.07	.04	-.00	-.04	.15	-.01
73	.50	-.37	.21	.01	.14	.01	.01	-.04	-.14	.22	.01
74	.52	.19	-.15	.34	.11	-.34	-.22	.01	.01	.00	.07
75	.56	-.47	.29	.19	.02	-.01	.07	-.03	-.01	.02	.06
76	.26	.10	-.11	.46	.24	-.35	-.18	-.15	.06	.01	.09
77	.49	.14	-.12	.27	.06	-.22	-.24	.18	-.09	.07	.07
78	.36	.18	-.29	.32	.04	-.14	-.13	.04	-.14	.14	-.13
79	.61	-.44	.23	.19	-.02	.03	.02	-.06	.03	-.05	-.01
80	.56	-.08	-.31	-.24	-.10	-.04	-.17	-.02	-.01	.11	-.17
81	.40	.40	.02	.01	.28	.14	-.18	-.25	.00	-.21	.05
82	.41	.17	-.25	.36	.05	-.15	-.17	.02	-.09	.20	-.15
83	.47	.10	-.17	.18	-.18	.14	.01	.19	-.12	.05	-.11
84	.46	.08	-.02	.20	.25	.33	.07	-.12	.22	.28	.05
85	.42	-.04	-.23	-.20	.04	-.22	.34	-.11	.25	-.26	.16
86	.54	.19	-.09	.30	.14	-.31	-.19	.03	.02	.03	.06
87	.55	.01	-.21	-.22	-.18	.00	-.20	.05	.04	.04	.12
88	.59	.13	-.24	.17	-.09	.04	.15	.17	-.10	-.15	-.08
89	.52	-.41	.14	.05	.03	.00	-.05	-.01	-.14	-.09	-.11
90	.47	-.02	-.24	-.22	.06	-.20	.30	-.16	.17	-.16	.19
91	.54	-.05	-.14	.09	.08	-.09	.13	.08	.18	-.16	-.47

APPENDIX I (extended)

12	13	14	15	16	17	18	19	20	21	Final Communalities
.13	-.06	.29	-.12	.17	-.12	-.06	-.10	.11	-.00	.76
-.23	.36	.01	.04	.07	-.07	-.09	.12	-.14	.08	.71
.07	-.12	.02	.24	-.02	.12	.20	-.07	-.05	.06	.69
.16	-.04	-.05	.03	-.14	-.01	-.01	.17	.06	.08	.53
.08	.06	-.16	-.09	-.22	-.09	-.12	-.21	.19	-.06	.81
-.13	-.09	-.03	-.11	.06	-.09	.15	-.08	-.03	-.13	.78
.03	.03	.02	.06	-.03	-.06	-.01	.02	-.03	-.15	.84
-.03	.01	.14	.19	-.07	-.15	.07	-.17	-.11	.04	.82
.04	.06	.02	.01	-.04	.05	-.08	-.03	.06	-.01	.61
-.07	-.09	-.01	-.14	-.05	-.01	-.08	.03	.03	-.04	.64
-.29	.32	.01	.02	.10	.01	-.03	.11	-.15	.08	.76
-.04	-.06	-.06	-.16	.02	.10	-.01	.06	-.00	-.16	.53
-.16	-.04	-.04	-.04	.08	-.04	.01	.03	.03	-.16	.77
-.02	-.02	.05	.12	.03	.07	.10	.01	.05	-.05	.35
.08	.07	.23	-.15	-.18	.42	.07	-.14	.04	.10	.86
-.22	-.08	.11	-.01	.05	-.03	-.11	-.18	-.05	.19	.68
.06	-.04	-.12	-.04	.07	.07	-.22	-.05	-.02	-.00	.66
-.09	-.11	-.02	-.09	-.05	.00	-.09	-.08	.03	.17	.60
.11	-.01	-.05	.13	-.09	.04	.06	-.03	.14	-.02	.43
-.07	.03	-.01	-.02	.06	.23	-.10	.20	.05	.02	.78
-.01	-.12	-.04	-.19	-.03	.16	-.08	-.05	-.06	-.10	.61
.05	-.04	-.11	.08	.03	.08	.10	-.06	.09	.07	.61
-.10	.03	.00	-.11	.07	.02	.15	-.06	.02	.23	.70
.17	-.13	.17	-.07	-.33	-.08	-.16	.19	-.17	-.07	.81
.11	-.09	-.01	-.03	-.10	-.06	-.02	.19	-.04	.00	.44
-.23	.03	.01	-.02	.09	.19	.00	.09	-.02	-.15	.73
-.22	-.05	-.11	.02	.11	.03	-.08	.01	.01	-.06	.72
.00	-.20	.02	.21	.04	.09	.21	-.15	-.06	.03	.62
.22	-.09	.12	.04	.22	-.04	-.01	-.02	.03	.09	.72
.06	.02	.18	.28	-.00	-.10	.00	-.09	-.01	.16	.68
.04	.04	.05	-.05	.10	.05	.17	-.04	.08	-.13	.70
-.07	-.03	-.30	-.02	-.02	.09	-.02	-.13	-.01	-.07	.79
.13	-.06	.02	.30	.16	.18	-.21	.07	-.02	-.06	.77
-.02	.18	-.07	-.22	.03	-.09	.01	-.08	-.09	-.08	.62
.02	.03	-.09	-.05	.02	-.09	.12	.18	.09	.18	.56
-.02	-.03	-.31	-.02	-.08	.16	-.12	-.01	.08	.03	.82
-.02	.02	-.06	.07	-.05	.11	-.10	.06	.04	.12	.61
-.02	-.02	.10	-.17	.09	-.03	.10	-.13	-.09	.09	.65
.09	.04	-.10	-.04	.02	-.11	.10	.14	.09	.16	.61
-.01	-.18	.00	.06	.07	.06	-.05	-.16	-.08	.00	.49
-.07	-.03	-.04	-.18	-.01	.10	-.11	.04	-.05	-.02	.65
-.12	-.02	-.03	.08	.24	-.22	-.04	.03	.03	-.14	.76
.04	.06	.07	-.05	.05	.02	.18	-.09	.09	-.14	.67
-.08	-.07	.02	-.04	.02	.00	-.08	.02	.15	.06	.54
-.03	-.04	-.09	.01	-.08	-.05	-.06	-.11	-.14	.07	.61
-.22	.11	.31	-.04	.05	.02	-.06	.02	.23	-.13	.74
-.08	-.06	-.10	-.03	.31	-.16	-.05	-.07	.05	-.06	.74
-.03	-.13	-.01	.16	.03	-.05	.13	.11	-.15	-.05	.74

APPENDIX I (continued)

Program Characteristics	1	2	3	4	5	6	7	8	9	10	11
92	.45	.12	-.17	.42	.01	-.11	-.01	.03	-.07	-.00	.06
93	.47	.14	-.18	.35	-.01	-.08	.06	.04	-.14	.01	.10
94	.35	.40	.14	-.11	.20	.08	-.20	-.03	.15	-.28	.06
95	.49	-.30	.27	-.00	.07	-.03	.09	-.01	-.15	-.18	.14
96	.55	-.39	.19	.11	.30	.02	.15	-.02	-.18	.14	-.02
97	.46	-.14	.04	-.08	.16	-.04	.18	.02	-.17	.21	.06
98	.26	.12	-.07	.47	.24	-.32	-.18	-.15	.06	.05	.11
99	.51	-.35	.27	.10	.06	-.03	.20	-.05	-.10	-.02	.15
100	.34	.36	.16	-.18	.19	.14	.09	-.12	-.26	-.05	-.18
101	.51	-.33	.18	-.04	.31	-.05	.02	-.01	-.23	-.00	-.02
102	.43	.13	-.21	.33	.06	-.22	-.05	.04	-.08	-.08	.14
103	.39	-.06	-.30	-.06	-.00	-.21	.35	-.07	.04	-.06	-.08
104	.49	-.10	-.11	.10	.11	-.05	.08	.11	.24	-.17	-.53
105	.44	.20	.37	-.19	.01	-.21	-.03	.15	.17	.19	.06
106	.47	.11	-.13	-.05	.38	.10	-.12	-.12	-.14	-.05	.17
107	.44	-.11	-.32	-.14	-.04	-.06	.05	-.06	.05	.05	.09
108	.50	.13	-.05	.20	.05	-.05	-.22	.20	-.06	.07	.07
Eigenvalues	26.61	7.69	5.99	3.90	3.11	2.99	2.64	2.33	2.11	1.86	1.82

APPENDIX I (extended)

12	13	14	15	16	17	18	19	20	21	Final Communalities
.01	.13	-.06	-.06	.00	-.07	.03	-.06	.06	.07	.48
.05	.15	-.16	.03	-.01	-.14	.01	-.09	-.01	.16	.55
-.16	-.05	.03	.01	.05	.08	-.11	-.19	-.12	.15	.63
-.31	-.16	.00	-.03	.03	.07	.22	.26	.02	-.00	.73
-.14	-.04	-.11	.16	-.16	-.08	.02	-.23	.02	-.09	.82
-.05	.04	.06	-.12	-.09	-.06	.08	.01	-.13	.03	.44
.13	-.02	.03	.27	.17	.19	-.23	.04	-.01	-.05	.76
-.21	-.20	-.27	-.05	-.11	-.01	.14	.09	.06	-.00	.74
.10	.07	-.23	-.02	.08	.10	.04	.10	.04	-.01	.58
-.30	.03	.14	.20	-.09	-.02	.02	-.06	.01	-.09	.73
-.01	.03	-.13	-.03	.09	-.10	.13	-.00	.08	.01	.50
.03	-.00	.22	-.22	-.04	.39	.12	-.14	.05	.04	.71
-.02	-.17	-.08	.12	.01	-.08	.05	.01	-.13	-.04	.75
-.05	-.08	-.06	-.06	.04	-.02	-.07	-.02	.05	.03	.57
.08	-.22	.16	-.07	-.20	-.09	-.08	.12	-.10	-.18	.68
.10	.01	-.03	.17	.05	.04	.08	-.04	.22	.11	.47
-.11	.24	-.08	-.13	-.01	-.08	.01	-.07	-.08	-.04	.53
1.70	1.55	1.47	1.28	1.21	1.16	1.08	1.02	0.95	0.89	Eigenvalues

APPENDIX J
Factor Structures for the Three Rotations of
the Principal Axes Based Upon N=315

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
76	9	.07	.07	-.05	.71	-.01	-.09	.09	-.05	.10	--	--
76	10	.07	.07	-.05	.71	.03	-.08	.10	-.06	.08	.07	--
76	11	.07	.07	-.05	.72	.00	-.07	.10	-.04	.08	.07	.02
78	9	-.00	.00	.15	.54	.10	.28	.11	-.03	.02	--	--
78	10	-.01	.01	.19	.55	.06	.26	.07	-.02	.05	-.12	--
78	11	-.01	.02	.20	.52	.09	.24	.05	-.05	.04	-.17	.18
102	9	.10	.07	.09	.54	.05	.24	.19	.02	.03	--	--
102	10	.10	.06	.08	.53	.09	.25	.21	.02	-.01	.05	--
102	11	.10	.05	.08	.54	.59	.27	.21	.04	-.01	.07	-.00
74	9	.12	.16	.17	.70	.02	.13	.14	.11	.07	--	--
74	10	.12	.16	.17	.70	.07	.13	.14	.10	.04	.08	--
74	11	.12	.16	.18	.70	.05	.14	.13	.11	.04	.07	.08
77	9	.15	.08	.21	.57	.04	.25	.02	.18	-.02	--	--
77	10	.15	.09	.22	.57	.05	.24	.01	.18	-.02	-.01	--
77	11	.15	.09	.22	.57	.03	.25	-.00	.18	-.02	-.01	.05
10	9	.14	-.06	.15	.28	-.11	.21	.15	.26	.20	--	--
10	10	.14	-.06	.13	.27	-.04	.21	.17	.25	.17	.15	--
10	11	-.03	.15	.21	.04	.04	.15	.09	.15	.15	.01	.56
98	9	.08	.09	-.07	.70	-.00	-.08	.06	-.04	.13	--	--
98	10	.07	.09	-.06	.70	.03	-.08	.06	-.04	.12	.04	--
98	11	.07	.09	-.06	.71	.00	-.07	.06	-.03	.12	.05	-.01
82	9	.05	.04	.16	.58	.07	.26	.09	-.01	.07	--	--
82	10	.04	.06	.20	.60	.03	.24	.04	-.01	.11	-.12	--
82	11	.03	.07	.22	.57	.06	.22	.01	-.04	.11	-.18	.20
92	9	.15	.08	.03	.51	.04	.33	.15	-.04	.11	--	--
92	10	.15	.08	.04	.52	.06	.33	.15	-.04	.10	.00	--
92	11	.14	.08	.04	.51	.05	.34	.14	-.03	.10	-.00	.06
93	9	.14	.09	.04	.44	.12	.39	.19	-.02	.08	--	--
93	10	.14	.10	.06	.44	.11	.38	.18	-.02	.08	-.06	--
93	11	.14	.09	.06	.45	.09	.40	.19	-.01	.08	-.05	.00

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
86	9	.15	.18	.16	.66	.05	.11	.13	.16	.09	--	--
86	10	.15	.18	.16	.66	.09	.11	.13	.16	.07	.05	--
86	11	.15	.18	.16	.66	.07	.12	.12	.17	.07	.04	.07
108	9	.19	.08	.21	.43	.07	.28	-.04	.21	.08	--	--
108	10	.19	.09	.22	.43	.08	.27	-.05	.21	.08	.01	--
108	11	.19	.08	.22	.43	.07	.28	-.06	.22	.08	.01	.04
91	9	.28	.04	.15	.24	-.07	.17	.35	.17	.21	--	--
91	10	.28	.02	.12	.23	.02	.19	.39	.17	.16	.18	--
91	11	.26	.05	.15	.17	.10	.12	.30	.07	.13	.03	.62
104	9	.29	-.01	.13	.22	-.13	.13	.28	.18	.24	--	--
104	10	.30	-.03	.09	.21	-.02	.15	.32	.18	.18	.22	--
104	11	.27	.01	.12	.14	.07	.08	.23	.07	.15	.06	.68
88	9	.17	.07	.18	.26	.10	.52	.29	.09	.12	--	--
88	10	.18	.05	.16	.25	.14	.54	.31	.08	.07	.07	--
88	11	.17	.06	.17	.23	.16	.52	.29	.06	.06	.03	.23
57	9	-.01	.14	.10	.16	.22	144	-.02	.16	.00	--	--
57	10	-.01	.15	.13	.16	.17	.43	-.05	.06	.02	-.14	--
57	11	-.01	.14	.12	.17	.17	.44	-.04	.07	.02	-.12	.08
4	9	.14	.14	.18	.20	.15	.57	.19	.15	.13	--	--
4	10	.14	.14	.18	.20	.15	.57	.19	.15	.12	-.03	--
4	11	.13	.15	.19	.18	.17	.56	.16	.13	.11	-.07	.19
83	9	.15	.06	.21	.18	.07	.52	.08	.04	.09	--	--
83	10	.15	.07	.22	.18	.05	.51	.06	.04	.10	-.04	--
83	11	.14	.08	.23	.16	.08	.50	.03	.02	.09	-.09	.18
40	9	.13	.07	.12	.12	-.02	.76	.10	.03	.22	--	--
40	10	.14	.06	.10	.12	.02	.76	.12	.03	.19	.09	--
40	11	.13	.06	.10	.11	.01	.77	.10	.03	.19	.08	.10
12	9	.06	.07	.14	.13	-.01	.72	.13	.00	.18	--	--
12	10	.07	.07	.13	.12	.02	.73	.15	.00	.15	.07	--
12	11	.07	.06	.12	.13	-.01	.75	.15	.03	.16	.08	-.02
35	9	.13	.01	.11	.13	.06	.72	.10	.10	.18	--	--
35	10	.13	.00	.09	.13	.09	.73	.11	.10	.15	.06	--
35	11	.13	-.00	.09	.13	.08	.75	.11	.12	.15	.06	.02

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
11	9	.13	.22	.19	.26	.11	.50	.17	.10	.12	--	--
11	10	.13	.22	.19	.26	.12	.51	.17	.10	.10	.01	--
11	11	.12	.23	.20	.24	.14	.50	.14	.08	.09	-.03	.17
85	9	.12	.10	.19	.03	-.06	-.03	.65	.11	.14	--	--
85	10	.13	.07	.15	.01	.03	-.00	.70	.10	.07	.20	--
85	11	.13	.07	.14	.03	-.01	.02	.71	.13	.07	.22	.02
90	9	.13	.10	.24	.05	.04	-.02	.64	.08	.14	--	--
90	10	.14	.09	.22	.04	.09	-.01	.66	.07	.09	.09	--
90	11	.14	.08	.21	.06	.05	.02	.68	.11	.10	.13	-.05
103	9	.13	.03	.13	.10	.01	.13	.60	-.01	.01	--	--
103	10	.12	.03	.14	.10	-.00	.02	.60	-.01	.02	-.06	--
103	11	.12	.04	.15	.09	.01	.12	.58	-.02	.01	-.08	.17
33	9	.08	.05	.17	.05	-.09	.29	.58	.15	-.00	--	--
33	10	.18	.06	.19	.06	-.11	.29	.57	.16	.02	-.15	--
33	11	.07	.07	.20	.04	-.09	.28	.55	.14	.01	-.09	.21
71	9	.18	-.04	.53	.01	.13	.08	.23	.10	.20	--	--
71	10	.18	-.04	.53	.01	.15	.08	.22	.09	.18	.03	--
71	11	.19	-.05	.53	.03	.11	.10	.24	.12	.19	.07	-.09
87	9	.16	.11	.59	.09	.02	.20	.14	.12	.07	--	--
87	10	.16	.11	.59	.09	.04	.20	.13	.12	.05	.09	--
87	11	.17	.11	.58	.10	.02	.21	.14	.14	.06	.11	-.04
70	9	.22	.12	.72	.05	.09	.08	.13	.06	.07	--	--
70	10	.22	.12	.73	.05	.10	.08	.11	.06	.05	.06	--
70	11	.22	.12	.73	.04	.10	.07	.11	.06	.06	.06	.05
56	9	.18	.08	.75	.08	.13	.14	.13	.06	.09	--	--
56	10	.18	.08	.77	.08	.12	.13	.10	.06	.09	.02	--
56	11	.18	.08	.77	.07	.13	.12	.09	.05	.09	.01	.08
49	9	.21	.10	.73	.06	.02	.16	.17	.09	.04	--	--
49	10	.21	.10	.75	.07	.01	.15	.14	.09	.04	.05	--
49	11	.21	.11	.75	.05	.02	.15	.13	.08	.04	.03	.11
106	9	.16	-.11	.24	.28	.43	.00	.13	.14	.24	--	--
106	10	.16	-.12	.24	.26	.47	.01	.13	.12	.18	-.02	--
106	11	.17	-.14	.23	.29	.42	.04	.16	.16	.20	.04	-.15

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
24	9	.19	.02	.28	.11	.11	.02	.72	.00	.11	--	--
24	10	.19	.01	.27	.10	.14	.04	.74	-.00	.07	.04	--
24	11	.20	.00	.27	.11	.11	.06	.74	.02	.07	.06	.02
32	9	.19	.03	.26	.18	.18	.03	.72	.01	.11	--	--
32	10	.18	.03	.28	.17	.18	.03	.72	.01	.10	-.06	--
32	11	.19	.02	.28	.19	.14	.05	.73	.04	.10	-.02	-.03
58	9	.13	.01	.19	.15	.10	.12	.64	-.09	.01	--	--
58	10	.12	.02	.22	.15	.06	.12	.63	-.08	.03	.13	--
58	11	.12	.03	.23	.14	.07	.11	.61	-.10	.02	-.16	.15
9	9	.11	.04	.21	.16	.03	.24	.62	.11	-.02	--	--
9	10	.10	.06	.25	.17	-.03	.22	.59	.12	.03	-.16	--
9	11	.09	.07	.26	.14	-.00	.21	.56	.09	.02	-.20	.21
107	9	.16	-.04	.38	.09	.01	.11	.37	-.01	.08	--	--
107	10	.16	-.03	.40	.10	-.00	.10	.36	-.01	.09	-.02	--
107	11	.16	-.03	.40	.10	.03	.12	.36	.01	.09	-.00	-.02
46	9	.25	-.03	.54	.02	.17	.09	.26	.07	.22	--	--
46	10	.25	-.02	.57	.02	.16	.09	.24	.07	.23	-.03	--
46	11	.25	-.03	.56	.04	.12	.11	.25	.10	.24	.01	-.09
30	9	.21	.01	.60	.20	.11	.17	.27	.05	.05	--	--
30	10	.21	.02	.63	.20	.09	.16	.23	.05	.06	-.05	--
30	11	.21	.02	.63	.20	.07	.17	.23	.06	.06	-.04	.01
80	9	.19	.01	.61	.12	.07	.13	.25	.05	.03	--	--
80	10	.19	.02	.64	.13	.05	.13	.22	.05	.05	-.03	--
80	11	.18	.03	.65	.10	.07	.10	.19	.02	.04	-.07	.19
27	9	.22	.09	.70	.12	.15	.10	.25	.06	.04	--	--
27	10	.22	.10	.72	.12	.13	.09	.22	.06	.05	-.03	--
27	11	.22	.10	.72	.11	.13	.08	.21	.05	.05	-.03	.08
22	9	.22	.06	.75	.16	.19	.10	.24	.04	.07	--	--
22	10	.21	.07	.77	.16	.17	.10	.20	.04	.07	-.03	--
22	11	.21	.07	.08	.15	.18	.09	.19	.03	.08	-.04	.09

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
26	9	.22	.06	.73	.12	.05	.13	.26	.07	.03	--	--
26	10	.22	.07	.75	.13	.03	.12	.22	.07	.04	-.00	--
26	11	.22	.08	.76	.11	.04	.11	.20	.05	.04	-.02	.13
67	9	.18	-.10	.25	.35	.42	.06	.20	.09	.16	--	--
67	10	.18	-.10	.27	.34	.42	.07	.19	.08	.12	-.08	--
67	11	.18	-.12	.26	.37	.37	.10	.22	.12	.14	-.02	-.16
68	9	.15	.01	.26	.12	.32	.15	.29	.00	.19	--	--
68	10	.14	.01	.29	.11	.31	.15	.28	-.00	.17	-.08	--
68	11	.15	-.00	.29	.13	.28	.17	.30	.02	.18	-.04	-.11
47	9	.13	.02	.32	.17	.29	.18	.36	.08	.16	--	--
47	10	.13	.02	.34	.17	.29	.18	.35	.08	.15	-.08	--
47	11	.13	.01	.34	.18	.26	.19	.36	.09	.15	-.06	-.03
43	9	.14	.03	.37	.24	.09	.23	.39	.13	.02	--	--
43	10	.14	.03	.38	.23	.09	.23	.39	.13	.01	-.01	--
43	11	.14	.04	.38	.22	.10	.22	.36	.11	.00	-.04	.17
7	9	.52	.14	.41	.14	-.11	.15	-.06	.06	.07	--	--
7	10	.55	.10	.33	.11	.02	.19	.01	.05	-.05	.38	--
7	11	.54	.11	.33	.11	.02	.19	-.00	.04	-.05	.37	.13
15	9	.56	.05	.42	.05	-.08	.24	.02	.07	.09	--	--
15	10	.58	.02	.34	.03	.03	.27	.08	.06	-.01	.32	--
15	11	.58	.01	.33	.04	-.00	.29	.09	.09	-.00	.35	-.01
41	9	.66	.02	.24	.13	-.00	.07	-.00	.10	.08	--	--
41	10	.67	-.01	.18	.10	.09	.10	.05	.10	-.01	.23	--
41	11	.66	-.00	.19	.09	.10	.08	.02	.07	-.01	.19	.22
89	9	.65	.00	.18	.11	.08	.07	.06	-.00	-.00	--	--
89	10	.66	-.00	.17	.10	.10	.08	.07	-.01	-.04	.04	--
89	11	.65	.00	.17	.09	.11	.07	.06	-.03	-.04	.02	.14
69	9	.74	.12	.14	.12	.03	.07	-.01	-.00	.02	--	--
69	10	.75	.11	.11	.11	.07	.08	.02	-.01	-.03	.10	--
69	11	.75	.10	.11	.12	.06	.09	.02	.00	-.02	.12	.00
63	9	.73	.14	.19	.13	-.01	.11	-.01	.01	.11	--	--
63	10	.74	.12	.13	.11	.08	.13	.04	-.00	.03	.21	--
63	11	.74	.12	.13	.11	.08	.13	.02	-.00	.03	.20	.11

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
101	9	.63	-.08	.08	.14	.28	-.05	.14	.15	-.01	--	--
101	10	.63	-.07	.10	.14	.25	-.05	.13	.15	-.02	-.15	--
101	11	.63	-.08	.10	.14	.25	-.05	.13	.15	-.02	-.13	01
95	9	.62	.10	.05	.03	.15	.04	.11	.08	-.01	--	--
95	10	.62	.09	.02	.02	.19	.06	.14	.07	-.07	.04	--
95	11	.63	.08	.01	.04	.16	.07	.16	.10	-.06	.09	-.09
17	9	.56	.12	.31	.13	-.14	.08	.10	-.02	.20	--	--
17	10	.58	.10	.25	.11	-.03	.10	.15	-.03	.12	.29	--
17	11	.57	.10	.25	.10	-.03	.10	.13	-.04	.12	.26	.17
31	9	.60	.06	.31	.06	-.06	.20	.21	-.03	.18	--	--
31	10	.61	.04	.27	.05	.03	.22	.25	-.04	.11	.21	--
31	11	.61	.04	.26	.06	-.00	.24	.25	-.02	.12	.23	.02
48	9	.69	.02	.10	.13	-.01	.06	.17	.00	.17	--	--
48	10	.69	.01	.07	.13	.05	.08	.20	.00	.12	.11	--
48	11	.68	.02	.08	.10	.07	.05	.17	-.03	.12	.06	.26
75	9	.79	.10	.01	.11	-.04	.06	.09	-.02	.11	--	--
75	10	.78	.11	.02	.12	-.04	.06	.08	-.01	.12	-.01	--
75	11	.78	.11	.02	.12	-.05	.07	.08	-.00	.11	-.00	.01
79	9	.76	.11	.10	.13	-.05	.09	.08	-.04	.16	--	--
79	10	.76	.10	.09	.13	-.01	.09	.10	-.04	.14	.08	--
79	11	.76	.11	.09	.13	-.02	.09	.09	-.04	.14	.08	.09
96	9	.71	-.09	-.04	.14	.23	.03	.18	.08	.09	--	--
96	10	.70	-.06	.02	.16	.16	.01	.14	.09	.15	-.26	--
96	11	.70	-.07	.02	.16	.16	.01	.14	.08	.14	-.26	.02
99	9	.67	.11	-.04	.05	.10	.06	.18	.02	.05	--	--
99	10	.67	.12	-.04	.05	.08	.06	.18	.02	.05	-.08	--
99	11	.67	.11	-.04	.07	.05	.08	.20	.05	.06	-.04	-.10
1	9	.55	.16	.41	.07	-.18	.09	-.02	.13	.13	--	--
1	10	.57	.14	.35	.06	-.08	.10	.02	.13	.06	.30	--
1	11	.56	.14	.35	.05	-.08	.10	.00	.12	.06	.29	.11
6	9	.54	.08	.43	-.07	-.10	.18	.10	.10	.12	--	--
6	10	.55	.07	.40	-.08	-.05	.19	.12	.10	.09	.18	--
6	11	.55	.06	.38	-.07	-.09	.21	.13	.14	.09	.21	-.06

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
13	9	.65	.04	.25	.03	-.06	.04	.07	.13	.10	--	--
13	10	.65	.05	.25	.04	-.05	.03	.06	.14	.11	.04	--
13	11	.65	.06	.25	.02	-.03	.02	.04	.12	.10	.01	.16
44	9	.70	.08	.11	-.00	-.00	.05	.17	.03	.08	--	--
44	10	.69	.10	.15	.02	-.06	.03	.03	.05	.14	-.14	--
44	11	.69	.11	.16	.00	-.04	.02	.02	.03	.13	-.6	.09
72	9	.74	.05	.11	-.01	-.00	.07	.05	-.00	.07	--	--
72	10	.72	.07	.15	.00	-.05	.05	.02	.01	.13	-.13	--
72	11	.73	.07	.14	-.00	-.05	.05	.01	.01	.12	-.13	.02
29	9	.76	.16	.10	-.02	-.04	.04	.04	.05	.06	--	--
29	10	.75	.18	.14	-.01	-.08	.02	.01	.07	.12	-.11	--
29	11	.76	.17	.13	-.00	-.09	.03	.01	.07	.11	-.09	-.03
28	9	.74	.16	.18	-.04	-.06	.09	.04	.05	.15	--	--
28	10	.73	.16	.18	-.03	-.05	.08	.03	.05	.17	.02	--
28	11	.73	.17	.18	-.04	-.06	.08	.02	.05	.16	.01	.06
73	9	.65	.01	.11	.07	.15	-.01	.08	.05	.04	--	--
73	10	.64	.04	.17	.09	.06	-.04	.02	.06	.11	-.24	--
73	11	.64	.03	.17	.09	.06	-.03	.03	.07	.11	-.23	-.05
51	9	.70	-.09	.02	.10	.27	-.01	.16	.13	.01	--	--
51	10	.67	-.05	.10	.13	.15	-.04	.09	.14	.11	-.37	--
51	11	.68	-.06	.11	.12	.16	-.05	.09	.14	.10	-.37	-.01
97	9	.40	.01	.07	.06	.24	.09	.28	.14	-.00	--	--
97	10	.38	.04	.15	.07	.13	.07	.21	.15	.08	-.33	--
97	11	.39	.03	.15	.08	.12	.07	.23	.17	.08	-.30	-.08
37	9	.59	.16	.04	-.02	.12	.04	.20	.12	-.00	--	--
37	10	.58	.18	.07	-.01	.07	.03	.17	.13	.03	-.17	--
37	11	.59	.17	.07	.01	.05	.04	.18	.15	.03	-.13	-.10
94	9	-.05	.23	.20	.17	.23	-.04	-.07	.35	.35	--	--
94	10	-.03	.19	.11	.13	.42	.01	.01	.32	.18	.36	--
94	11	-.03	.18	.11	.15	.39	.01	.01	.33	.20	.37	.04
59	9	.04	.17	.15	.28	.35	-.07	-.09	.24	.36	--	--
59	10	.06	.13	.07	.24	.52	-.02	-.02	.21	.19	.30	--
59	11	.05	.12	.08	.24	.51	-.03	-.02	.20	.20	.29	.11

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
81	9	-.04	.16	.18	.29	.43	-.03	-.01	.12	.42	--	--
81	10	-.02	.13	.13	.26	.57	.00	.04	.09	.28	.22	--
81	11	-.02	.11	.13	.27	.54	.01	.05	.11	.29	.25	-.03
66	9	.01	.18	.13	.27	.45	-.05	-.06	.27	.34	--	--
66	10	.03	.15	.08	.24	.59	-.01	-.00	.24	.19	.21	--
66	11	.02	.15	.09	.23	.60	-.03	-.02	.22	.20	.18	.16
61	9	.12	.56	.15	.25	.17	-.03	-.02	.22	.12	--	--
61	10	.12	.55	.13	.24	.23	-.02	-.01	.20	.07	.10	--
61	11	.12	.56	.14	.23	.25	-.04	-.02	.18	.07	.07	.13
25	9	.16	.77	.09	.21	.03	.04	.02	.18	.18	--	--
25	10	.16	.77	.08	.21	.09	.04	.02	.17	.15	.12	--
25	11	.16	.77	.08	.22	.10	.05	.02	.18	.15	.12	.02
16	9	.14	.81	.04	.20	-.00	.07	.04	.12	.20	--	--
16	10	.14	.80	.03	.20	.05	.06	.04	.11	.17	.11	--
16	11	.14	.80	.03	.21	.05	.07	.04	.13	.18	.12	-.01
20	9	.14	.82	-.00	.14	.00	.07	.06	.12	.19	--	--
20	10	.14	.82	-.01	.15	.06	.07	.06	.11	.17	.11	--
20	11	.14	.81	-.01	.16	.05	.09	.07	.13	.17	.12	-.04
2	9	.06	.34	.14	-.06	.48	.35	.12	.09	.15	--	--
2	10	.07	.32	.12	-.08	.51	.37	.14	.07	.07	-.02	--
2	11	.07	.31	.12	-.07	.52	.37	.15	.08	.08	-.01	-.01
19	9	.10	.28	.10	-.05	.59	.20	.01	.18	.08	--	--
19	10	.10	.27	.09	-.07	.60	.22	.03	.16	.00	-.08	--
19	11	.10	.26	.10	-.07	.62	.20	.03	.15	.01	-.08	.03
42	9	.01	.24	.12	.07	.60	.19	.03	.13	.21	--	--
42	10	.01	.23	.13	.06	.61	.20	.03	.11	.15	-.09	--
42	11	.02	.22	.14	.07	.61	.20	.04	.12	.16	-.07	-.06
34	9	.02	.34	.05	-.02	.61	.17	.06	.21	.12	--	--
34	10	.03	.33	.05	-.03	.62	.19	.06	.19	.05	-.10	--
34	11	.02	.33	.06	-.04	.66	.16	.05	.16	.06	-.12	.09
100	9	.03	.21	.05	-.00	.57	.09	.06	.20	.15	--	--
100	10	.03	.20	.06	-.02	.57	.10	.07	.18	.10	.11	--
100	11	.03	.20	.07	-.02	.60	.08	.06	.16	.10	-.13	.08

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
60	9	.15	.60	.10	.02	.32	.16	.01	.15	-.03	--	--
60	10	.14	.61	.12	.02	.29	.16	-.02	.14	.04	-.11	--
60	11	.14	.61	.13	.00	.34	.14	-.03	.12	-.04	-.14	.09
39	9	.14	.81	.08	.04	.21	.20	.05	.14	.02	--	--
39	10	.14	.82	.10	.04	.20	.20	.03	.14	.01	-.04	--
39	11	.14	.81	.10	.04	.22	.20	.03	.14	.01	-.05	.00
36	9	.13	.84	.07	.06	.21	.17	.10	.14	.05	--	--
36	10	.12	.84	.09	.06	.20	.17	.09	.13	.04	-.05	--
36	11	.13	.84	.09	.06	.22	.17	.09	.13	.04	-.04	-.02
50	9	.13	.84	-.00	.03	.18	.15	.10	.12	.05	--	--
50	10	.12	.84	.01	.03	.18	.15	.09	.12	.04	-.04	--
50	11	.12	.83	.01	.03	.19	.15	.09	.13	.04	-.03	-.04
52	9	.03	.15	.15	.02	.07	.12	-.03	.71	.08	--	--
52	10	.03	.14	.12	.01	.15	.13	-.01	.70	.02	.13	--
52	11	.03	.13	.12	.01	.13	.14	-.01	.71	.03	.14	.04
18	9	.13	.17	.02	.05	.19	.10	.01	.74	.05	--	--
18	10	.12	.17	.03	.04	.22	.10	.01	.73	.04	-.02	--
18	11	.12	.17	.03	.04	.22	.10	.00	.73	.03	-.03	.07
23	9	.05	.12	.09	.08	.11	.08	.16	.72	.07	--	--
23	10	.04	.13	.10	.08	.13	.07	.16	.72	.06	-.00	--
23	11	.05	.11	.09	.09	.11	.09	.16	.74	.06	.02	-.02
65	9	.07	.11	.07	-.01	.16	-.06	.13	.68	.10	--	--
65	10	.07	.12	.08	-.01	.18	-.06	.12	.68	.09	-.01	--
65	11	.07	.11	.08	-.01	.17	-.06	.12	-.79	.09	-.01	.02
38	9	.08	.12	.09	.01	.23	.10	.03	.69	.11	--	--
38	10	.08	.13	.09	.01	.25	.10	.02	.69	.10	-.03	--
38	11	.08	.12	.09	.01	.25	.09	.01	.69	.09	-.03	.07
53	9	.26	.33	.02	.08	.05	.04	.10	.62	.06	--	--
53	10	.24	.35	.05	.09	.04	.02	.08	.62	.09	-.07	--
53	11	.24	.35	.05	.09	.05	.02	.07	.62	.09	-.08	.07
105	9	.21	.43	.13	.07	.01	-.04	.06	.48	.06	--	--
105	10	.20	.45	.16	.08	-.00	-.06	.02	.49	.11	-.05	--
105	11	.20	.45	.16	.09	-.00	-.05	.02	.50	.10	-.05	.00

APPENDIX J (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11
3	9	.10	.16	.24	.06	.14	.46	.03	-.08	.33	--	--
3	10	.10	.16	.24	.06	.16	.46	.02	-.08	.31	.04	--
3	11	.10	.16	.24	.07	.14	.48	.04	-.06	.32	.06	-.07
21	9	.03	.16	.23	.00	.19	.41	.08	-.04	.34	--	--
21	10	.03	.16	.24	.00	.20	.41	.07	-.04	.32	.01	--
21	11	.04	.15	.23	.02	.17	.44	.10	-.00	.33	.06	-.15
54	9	.14	.04	-.05	.00	.00	.26	.15	.18	.50	--	--
54	10	.12	.08	.03	.04	-.04	.22	.08	.20	.60	-.18	--
54	11	.12	.09	.04	.01	-.02	.20	.06	.17	.59	-.23	.16
45	9	.11	-.04	-.03	.03	.06	.16	.19	.14	.51	--	--
45	10	.09	-.00	.05	.06	.03	.13	.13	.15	.60	-.17	--
45	11	.09	.01	.05	.04	.04	.11	.11	.13	.59	-.22	.16
55	9	.10	.13	.16	.31	.01	.32	.19	-.02	.39	--	--
55	10	.09	.14	.19	.32	.03	.31	.17	-.01	.41	.00	--
55	11	.09	.14	.19	.31	.03	.31	.15	-.02	.41	-.03	.12
5	9	.06	.14	.25	.17	.09	.16	.11	.12	.46	--	--
5	10	.06	.15	.26	.17	.14	.16	.09	.12	.45	.06	--
5	11	.06	.14	.26	.19	.10	.18	.10	.14	.46	.08	-.05
64	9	.14	.03	.12	.12	.15	.05	.05	.01	.62	--	--
64	10	.14	.04	.14	.13	.20	.04	.03	.01	.62	.04	--
64	11	.15	.02	.13	.15	.16	.07	.05	.04	.63	.08	-.12
84	9	.22	-.03	.03	.17	.13	.14	.11	.06	.61	--	--
84	10	.21	.00	.09	.19	.13	.11	.06	.07	.66	-.11	--
84	11	.21	-.00	.09	.20	.11	.12	.06	.07	.66	-.11	-.00
14	9	.15	.20	.06	.07	.08	.06	.04	.05	.65	--	--
14	10	.16	.19	.04	.06	.20	.07	.06	.04	.59	.21	--
14	11	.16	.20	.04	.05	.21	.06	.04	.02	.59	.17	.16
8	9	.10	.21	.10	.04	.09	.16	-.02	-.00	.59	--	--
8	10	.11	.19	.06	.03	.22	.18	.02	-.02	.51	.24	--
8	11	.10	.19	.06	.02	.22	.17	.00	-.03	.51	.22	.13
62	9	.18	.09	.09	.00	.12	.22	.04	.06	.50	--	--
62	10	.18	.09	.07	-.00	.20	.23	.06	.05	.45	.13	--
62	11	.18	.09	.07	-.00	.20	.23	.05	.04	.45	.11	.09

APPENDIX K
Factor Structures for the Three Rotations of
the Principal Axes Based Upon N=450

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
76	10	.10	.03	.02	.72	.02	-.07	.06	-.04	.02	.09	--	--
76	11	.10	.03	.02	.72	.03	-.08	.04	-.04	.02	.01	.13	--
76	12	.10	.04	.02	.71	-.00	-.09	.04	-.05	.01	.10	.03	.14
78	10	-.03	.04	.14	.50	.06	.23	.12	-.07	.09	-.07	--	--
78	11	-.04	.05	.16	.49	.05	.24	.10	-.07	.08	.11	.04	--
78	12	-.05	.03	.18	.51	.08	.18	.07	-.06	.11	.04	.09	-.08
102	10	.06	.09	.10	.56	.01	.19	.17	.10	.06	.03	--	--
102	11	.06	.09	.10	.56	.01	.19	.16	.09	.07	.01	.08	--
102	12	.06	.11	.09	.55	-.02	.22	.18	.08	.04	.02	.04	.13
74	10	.13	.17	.15	.64	-.02	.12	.13	.20	.09	.12	--	--
74	11	.13	.16	.15	.65	-.02	.10	.13	.20	.10	-.07	.12	--
74	12	.13	.18	.14	.64	-.04	.11	.14	.19	.08	.09	-.04	.15
77	10	.11	.18	.20	.57	.01	.23	.04	.16	.05	-.06	--	--
77	11	.11	.16	.17	.60	.02	.20	.08	.17	.07	-.03	-.11	--
77	12	.11	.16	.18	.61	.03	.17	.07	.18	.08	-.06	-.04	-.05
10	10	.10	-.01	.04	.24	.01	.27	-.20	.15	.11	.28	--	--
10	11	.08	.02	.10	.18	.01	.31	.09	.12	.06	.01	.46	--
10	12	.08	-.00	.13	.20	.04	.19	.03	.13	.10	.60	.01	.00
98	10	.10	.03	-.01	.73	.05	-.05	.02	-.02	.02	.07	--	--
98	11	.10	.03	-.01	.73	.05	-.07	.02	-.01	.03	-.01	.08	--
98	12	.10	.03	-.01	.73	.03	-.08	.02	-.02	.03	.06	.00	.12
82	10	.02	.10	.13	.55	.08	.26	.09	-.04	.11	-.07	--	--
82	11	.02	.10	.14	.54	.07	.27	.09	=.05	.11	.09	.01	--
82	12	.01	.08	.17	.57	.12	.18	.04	-.03	.15	.15	.05	-.13
92	10	.15	.06	.08	.51	.08	.28	.13	.02	.08	.00	--	--
92	11	.15	.05	.06	.53	.08	.25	.15	.03	.10	-.03	-.01	--
92	12	.15	.05	.07	.54	.08	.24	.15	.03	.10	.02	-.02	.02
93	10	.12	.13	.07	.44	.15	.34	.18	.00	.07	-.03	--	--
93	11	.12	.12	.05	.46	.16	.32	.21	.02	.09	-.03	-.05	--
93	12	.12	.11	.06	.47	.17	.31	.20	.02	.09	-.01	-.03	-.02
86	10	.16	.17	.14	.61	-.00	.12	.13	.25	.11	.06	--	--
86	11	.15	.17	.13	.62	.01	.10	.13	.25	.12	-.03	.08	--
86	12	.15	.18	.14	.62	-.01	.09	.13	.24	.11	.07	-.02	.10

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
108	10	.13	.16	.19	.45	.03	.23	.02	.16	.12	-.07	--	--
108	11	.13	.15	.16	.47	.04	.21	.06	.17	.14	-.02	-.12	--
108	12	.13	.15	.17	.48	.05	.19	.04	.17	.15	-.07	-.03	-.04
91	10	.25	.06	.01	.19	.00	.23	.40	.12	.09	.36	--	--
91	11	.23	.09	.09	.11	-.00	.28	.27	.08	.04	.01	.60	--
91	12	.22	.08	.11	.13	.02	.17	.22	.09	.07	.70	.01	.05
104	10	.26	.04	-.03	.16	-.03	.17	.38	.08	.10	.41	--	--
104	11	.24	.08	.07	.08	-.03	.24	.22	.04	.03	.02	.67	--
104	12	.23	.06	.09	.09	-.01	.11	.17	.05	.07	.79	.01	.05
88	10	.17	.09	.12	.20	.08	.49	.31	.05	.10	.12	--	--
88	11	.17	.10	.14	.18	.08	.50	.26	.04	.09	-.02	.21	--
88	12	.17	.10	.15	.19	.09	.47	.25	.04	.09	.27	-.02	-.00
57	10	.05	.10	.13	.16	.24	.39	-.04	.07	.10	-.13	--	--
57	11	.05	.10	.13	.16	.23	.39	-.03	.08	.10	.08	-.10	--
57	12	.05	.10	.13	.17	.24	.40	-.03	.08	.09	-.07	.07	-.01
4	10	.13	.09	.13	.19	.19	.59	.16	.11	.10	.07	--	--
4	11	.13	.10	.15	.17	.19	.60	.14	.11	.10	-.02	.13	--
4	12	.12	.08	.17	.20	.22	.54	.11	.12	.11	.24	-.04	-.06
83	10	.12	.04	.19	.14	.09	.53	.09	.02	.10	.03	--	--
83	11	.12	.05	.21	.12	.08	.55	.06	.01	.09	.01	.10	--
83	12	.11	.04	.23	.14	.11	.51	.04	.02	.10	.18	.00	-.06
40	10	.11	.03	.12	.13	.04	.77	.09	.02	.20	.04	--	--
40	11	.11	.04	.13	.11	.04	.78	.07	.02	.20	-.02	.10	--
40	12	.12	.05	.12	.11	.03	.82	.09	.01	.16	.09	.00	.05
12	10	.07	.03	.14	.12	.02	.73	.09	.02	.18	.01	--	--
12	11	.07	.03	.15	.11	.02	.74	.09	.02	.18	-.03	.03	--
12	12	.07	.05	.13	.11	-.00	.80	.12	.00	.13	-.01	-.00	.06
35	10	.10	-.02	.12	.12	.07	.73	-.07	.09	.19	.01	--	--
35	11	.10	-.01	.13	.11	.07	.74	.05	.08	.19	.00	.07	--
35	12	.11	.01	.12	.11	.05	.79	.08	.07	.15	.05	.03	.07
11	10	.09	.19	.16	.22	.12	.48	.15	.05	.09	.08	--	--
11	11	.09	.20	.18	.21	.12	.49	.13	.04	.08	-.04	.12	--
11	12	.09	.19	.19	.22	.14	.46	.11	.04	.09	.18	-.04	-.01

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
85	10	.16	.04	.17	.03	.07	-.01	.62	.14	.09	.17	--	--
85	11	.15	.04	.18	.02	.07	-.02	.60	.14	.09	-.06	.23	--
85	12	.16	.07	.15	-.00	.00	.06	.65	.12	.03	.07	-.00	.27
90	10	.17	.04	.20	.03	.09	.01	.61	.10	.10	.09	--	--
90	11	.13	.00	.14	.10	.05	.12	.61	-.02	.07	-.05	-.02	--
90	12	.18	.07	.18	.01	.03	.07	.64	.08	.06	.03	.03	.21
103	10	.13	-.02	.17	.07	.04	.15	.57	-.03	.04	-.01	--	--
103	11	.13	.00	.14	.10	.05	.12	.61	-.02	.07	-.05	-.02	--
103	12	.13	-.01	.16	.12	.08	.09	.59	-.00	.09	.05	-.07	-.11
33	10	.11	.05	.20	.05	-.01	.29	.53	.14	.06	.01	--	--
33	11	.11	.04	.17	.07	-.00	.26	.55	.15	.09	-.06	.00	--
33	12	.11	.03	.19	.09	.03	.23	.53	.16	.10	.09	-.09	-.12
71	10	.19	-.05	.52	.04	.06	.05	-.19	.10	.23	.01	--	--
71	11	.18	-.04	.54	.02	.05	.07	.16	.09	.21	.06	.10	--
71	12	.18	-.02	.52	-.00	-.00	.13	.20	.07	.17	-.00	.11	.21
87	10	.17	.13	.56	.12	.05	.21	.17	.11	.09	.02	--	--
87	11	.16	.12	.55	.13	.05	.20	.18	.11	.10	-.08	-.02	--
87	12	.17	.12	.56	.13	.05	.19	.17	.12	.10	.01	-.07	.00
70	10	.23	.08	.73	.06	.11	.10	.12	.09	.08	.08	--	--
70	11	.23	.08	.73	.06	.11	.10	.12	.09	.08	-.10	.04	--
70	12	.23	.09	.73	.06	.09	.10	.11	.08	.07	.02	-.07	.11
56	10	.22	.05	.75	.07	.14	.15	.09	.09	.11	.05	--	--
56	11	.22	.06	.76	.06	.14	.16	.08	.09	.11	-.06	.03	--
56	12	.22	.05	.76	.06	.13	.14	.07	.09	.11	.05	-.04	.07
49	10	.23	.06	.72	.05	.01	.16	.12	.13	.07	.08	--	--
49	11	.23	.07	.72	.04	.01	.16	.11	.13	.06	-.09	.06	--
49	12	.23	.07	.73	.04	.00	.16	.10	.13	.06	.06	-.07	.06
106	10	.13	-.15	.28	.27	.27	.03	-.12	.15	.24	-.08	--	--
106	11	.12	-.13	.32	.24	.26	.05	.08	.13.	.21	.20	.09	--
106	12	.12	-.11	.30	.23	.20	.10	.11	.12	.18	-.02	.25	.24
24	10	.18	.03	.28	.13	.10	-.01	.71	.01	.09	.02	--	--
24	11	.18	.03	.29	.12	.10	-.01	.70	.01	.08	.05	.13	--
24	12	.18	.04	.28	.11	.07	.02	.72	.00	.06	.07	.08	.11

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
32	10	.19	.05	.27	.16	.13	.00	.71	.03	.11	-.04	--	--
32	11	.18	.05	.27	.16	.12	.00	.70	.03	.11	.10	.10	--
32	12	.18	.07	.27	.15	.10	.03	.72	.03	.09	.04	.12	.10
58	10	.12	-.04	.22	.12	.05	.11	.63	-.12	.04	-.08	--	--
58	11	.12	.02	.20	.15	.05	.09	.66	-.11	.06	.02	-.04	--
58	12	.12	.01	.23	.17	.10	.03	.63	-.09	.09	.06	-.02	-.17
9	10	.12	.10	.24	.17	-.01	.21	.61	.06	.04	-.09	--	--
9	11	.11	.10	.22	.19	-.01	.19	.64	.08	.06	.04	-.03	--
9	12	.11	.07	.25	.21	.05	.11	.59	.09	.10	.12	-.01	-.23
107	10	.18	-.02	.39	.14	-.01	.07	-.39	-.03	.09	-.05	--	--
107	11	.17	-.02	.39	.14	-.01	.07	.40	-.03	.09	.03	-.00	--
107	12	.17	-.02	.39	.14	-.01	.07	.39	-.03	.09	.01	.04	-.02
46	10	.23	-.01	.55	.07	.09	.06	-.23	.04	.23	-.03	--	--
46	11	.22	.01	.57	.05	.08	.08	.21	.04	.21	.07	.06	--
46	12	.22	.02	.56	.04	.05	.11	.22	.03	.19	-.00	.11	.13
30	10	.20	.08	.58	.21	.08	.18	.28	.02	.08	-.08	--	--
30	11	.19	.09	.59	.21	.07	.19	.29	.02	.08	.05	-.03	--
30	12	.19	.07	.60	.23	.10	.13	.25	.03	.11	.06	.03	-10
80	10	.20	.06	.60	.13	.05	.13	.27	.03	.03	.00	--	--
80	11	.20	.07	.61	.12	.04	.14	.26	.03	.02	-.00	.04	--
80	12	.19	.05	.63	.14	.07	.07	.22	.04	.05	.13	-.02	-.08
27	10	.23	.10	.72	.13	.12	.08	.25	.05	.06	-.00	--	--
27	11	.23	.10	.73	.13	.11	.09	.24	.05	.05	-.01	.02	--
27	12	.22	.10	.74	.13	.12	.05	.22	.05	.06	.06	-.01	.01
22	10	.24	.06	.76	.16	.13	.09	.20	.05	.09	-.00	--	--
22	11	.23	.07	.08	.14	.12	.11	.18	.05	.08	.03	.05	--
22	12	.23	.07	.79	.14	.12	.08	.16	.05	.09	.08	.03	.03
26	10	.22	.07	.74	.13	.01	.11	.22	.08	.05	-.01	--	--
26	11	.22	.08	.75	.12	.00	.12	.21	.08	.04	-.01	.02	--
26	12	.21	.07	.76	.13	.02	.08	.18	.08	.06	.07	-.01	-.03
67	10	.14	-.09	.30	.35	.26	.06	-.19	.07	.19	-.19	--	--
67	11	.14	-.08	-.33	.33	.25	.09	.17	.07	.17	.24	-.01	--
67	12	.13	-.07	.32	.33	.22	.11	.19	.06	.15	-.06	.27	.11

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
68	10	.16	-.04	.32	.13	.22	.10	.27	-.01	.17	-.13	--	--
68	11	.16	.04	.34	.12	.21	.11	.26	-.01	.17	.13	-.02	--
68	12	.16	.05	.33	.12	.20	.13	.27	-.01	.16	-.04	.15	.04
47	10	.17	.05	.30	.14	.22	.16	.33	.04	.16	-.08	--	--
47	11	.17	.06	.32	.13	.21	.17	.32	.04	.15	.10	.03	--
47	12	.16	.06	.32	.14	.21	.16	.31	.04	.15	.04	.11	.02
43	10	.16	.09	.35	.19	.08	.22	.36	.10	.11	-.04	--	--
43	11	.16	.09	.35	.19	.08	.22	.36	.10	.11	.03	.01	--
43	12	.16	.08	.36	.20	.10	.18	.34	.11	.13	.08	.02	-.06
7	10	.51	.14	.33	.09	-.00	.19	-.02	.07	.01	.36	--	--
7	11	.52	.12	.29	.13	.01	.13	.01	.09	.04	-.40	.10	--
7	12	.53	.13	.29	.12	-.02	.16	.02	.08	.02	.06	-.36	.18
15	10	.56	.04	.35	.03	-.00	.25	.03	.10	.04	.30	--	--
15	11	.57	.01	.29	.09	.02	.18	.09	.12	.09	-.41	.01	--
15	12	.58	.02	.28	.08	-.02	.23	.11	.11	.05	-.06	-.36	.17
41	10	.65	.00	.20	.10	.05	.08	.03	.07	.06	.22	--	--
41	11	.65	.00	.20	.10	.06	.07	.01	.07	.06	-.15	.17	--
41	12	.65	.01	.20	.09	.03	.08	.02	.06	.05	.14	-.11	.15
89	10	.64	-.02	.19	.13	.08	.06	-.06	.02	.07	.05	--	--
89	11	.64	-.02	.20	.12	.08	.06	.04	.02	.06	.01	.09	--
89	12	.64	-.01	.20	.12	.06	.07	.05	.01	.05	.06	.04	.10
69	10	.73	.06	.16	.06	.03	.02	-.01	.04	.04	.12	--	--
69	11	.73	.07	.17	.05	.03	.02	-.02	.04	.04	-.05	.12	--
69	12	.73	.09	.14	.02	-.02	.09	.02	.02	-.02	-.01	.02	.23
63	10	.74	-.10	.14	.06	.08	.07	.05	-.01	.07	.24	--	--
63	11	.75	.09	.14	.07	.09	.05	.05	-.00	.08	-.19	.16	--
63	12	.75	.11	.12	.04	.04	.10	.08	-.02	.04	.07	-.13	.21
101	10	.61	-.05	.12	.16	-.15	-.09	-.14	.20	.12	-.15	--	--
101	11	.59	-.02	.19	.10	.13	-.03	.06	.17	.07	.35	.16	--
101	12	.58	-.00	.17	.09	.09	.00	.09	.16	.05	.07	.40	.16
95	10	.59	.08	.09	.07	-.04	-.05	.13	.16	.11	-.05	--	--
95	11	.58	.10	.14	.03	.03	-.01	.08	.14	.07	.20	.15	--
95	12	.58	.14	.10	.00	-.04	.09	.14	.12	.01	-.02	.28	.24

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	13
17	10	.58	-.10	.20	.09	-.02	.13	.16	-.05	.03	.26	--	--
17	11	.58	.08	.16	.13	-.00	.09	.20	-.03	.06	-.29	.08	--
17	12	.59	.06	.18	.14	.02	.04	.17	-.03	.08	.15	-.30	-.02
31	10	.63	-.01	.20	.04	.05	.21	-.23	-.02	.04	.21	--	--
31	11	.64	-.03	.15	.09	.06	.15	.29	.00	.09	-.30	.01	--
31	12	.65	-.03	.16	.10	.06	.14	.28	.01	.09	.04	-.28	.03
48	10	.71	-.02	.05	.11	.06	.07	-.20	-.06	.07	.13	--	--
48	11	.70	-.02	.06	.11	.06	.07	.18	-.06	.06	-.05	.15	--
48	12	.70	-.03	.07	.12	.08	.01	.16	-.05	.09	.23	-.05	-.02
75	10	.80	.05	.03	.07	.00	.04	.10	.01	.07	.01	--	--
75	11	.79	.05	.04	.06	.00	.04	.08	.01	.06	.06	.08	--
75	12	.79	.06	.04	.06	-.01	.06	.09	.00	.05	.06	.09	.05
79	10	.77	.07	.05	.07	.02	.09	.12	-.03	.09	.12	--	--
79	11	.77	.07	.05	.07	.02	.08	.11	-.03	.09	-.06	.12	--
79	12	.78	.07	.05	.07	.01	.09	.12	-.03	.08	.11	-.03	.07
96	10	.69	-.04	.01	.18	-.11	-.05	-.19	.08	.16	-.25	--	--
96	11	.67	-.00	.08	.12	.09	.01	.12	.06	.11	.44	.11	--
96	12	.66	.00	.08	.12	.09	.00	.12	.06	.11	.10	.45	-.00
99	10	.64	.10	.00	.08	-.02	-.01	.21	.10	.10	-.16	--	--
99	11	.63	.12	.05	.04	-.03	.03	.15	.08	.06	.30	.11	--
99	12	.63	.15	.03	.02	-.07	.10	.20	.07	.02	.01	.35	.10
1	10	.58	.14	.26	.03	.01	.15	.06	.10	.00	.24	--	--
1	11	.59	.11	.20	.09	.03	.09	.13	.13	.05	-.35	-.02	--
1	12	.59	.10	.22	.10	.06	.04	.09	.14	.08	.07	-.36	-.05
6	10	.58	.04	.30	-.07	.04	.25	.09	.12	.01	.14	--	--
6	11	.60	-.01	.21	.02	.06	.16	.20	.16	.08	-.38	-.19	--
6	12	.61	-.02	.23	.03	.09	.14	.18	.17	.10	-.10	-.39	-.09
13	10	.69	.06	.18	.03	.07	.10	.08	.06	.04	.02	--	--
13	11	.70	.05	.16	.06	.07	.07	.12	.07	.06	-.08	-.06	--
13	12	.69	.02	.19	.09	.13	-.02	.06	.10	.11	.09	-.11	-.17
44	10	.71	.07	.12	.04	.05	.10	.05	.05	.08	-.10	--	--
44	11	.71	.07	.11	.05	.04	.09	.06	.05	.09	.07	-.06	--
44	12	.70	.05	.14	.07	.09	.03	.02	.07	.12	.05	.05	-.16

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
72	10	.74	-.02	.12	.03	.05	.09	.03	-.04	.04	-.10	--	--
72	11	.74	.02	.11	.03	.05	.08	.05	-.04	.05	.06	-.08	--
72	12	.73	.01	.13	.05	.08	.04	.03	-.02	.08	-.00	.05	-.12
29	10	.77	.10	.11	-.02	.04	.06	.01	.06	.05	-.09	--	--
29	11	.77	.10	.10	-.01	.04	.05	.03	.07	.06	.04	-.10	--
29	12	.77	.09	.11	-.00	.06	.04	.03	.08	.07	-.06	.04	-.07
28	10	.75	.13	.13	-.04	.07	.11	.06	.04	.08	.04	--	--
28	11	.76	.12	.11	-.02	.07	.08	.09	.05	.10	-.10	-.05	--
28	12	.76	.11	.12	-.01	.10	.06	.07	.06	.12	.01	-.10	-.06
73	10	.64	.05	.13	.09	.09	-.01	.07	.07	.12	-.26	--	--
73	11	.64	.06	.15	.07	.08	.02	.06	.06	.11	.27	-.09	--
73	12	.63	.06	.16	.08	.10	-.01	.05	.07	.13	-.03	.26	-.11
51	10	.66	.00	.08	.14	.14	-.02	.14	.13	.14	-.37	--	--
51	11	.65	.03	.13	.10	.12	.03	.10	.11	.10	.44	-.06	--
51	12	.63	.01	.14	.12	.15	-.02	.07	.13	.14	.02	.43	-.15
97	10	.39	.06	.16	.11	.10	.07	.20	.15	.11	.34	--	--
97	11	.39	.07	.17	.10	.08	.09	.20	.15	-.11	.30	-.16	--
97	12	.38	.07	.18	.12	.11	.07	.19	.16	.13	-.10	.28	-.15
37	10	.56	.16	.10	.05	.06	.01	.17	.19	.09	-.23	--	--
37	11	.56	.17	.12	.03	.05	.04	.15	.19	-.07	.26	-.04	--
37	12	.55	.18	.12	.03	.05	.06	.16	.19	.06	-.06	.28	-.02
94	10	.01	.13	.13	.17	.28	-.03	-.03	.38	.23	.31	--	--
94	11	.01	.13	.14	.17	.29	-.04	-.06	.37	-.23	-.16	.27	--
94	12	.02	.17	.10	.12	.17	.07	.01	.34	.14	.04	-.07	.51
59	10	.07	.12	.13	.29	.37	-.08	.00	.28	.30	.27	--	--
59	11	.06	.13	.17	.26	.37	-.07	-.06	.26	-.27	-.05	.32	--
59	12	.07	.17	.13	.22	.26	.02	.01	.23	.20	.10	.04	.53
81	10	.03	.04	.16	.31	.41	-.04	.02	.24	.35	.19	--	--
81	11	.03	.04	.16	.30	.42	-.06	.00	.24	.35	-.08	.17	--
81	12	.03	.07	.13	.27	.32	.02	.06	.21	.28	-.02	.00	.46
66	10	.05	.11	.10	.31	.50	-.05	.00	.31	.28	.20	--	--
66	11	.04	.12	.12	.29	.50	-.05	-.04	.30	.26	-.03	.23	--
66	12	.04	.14	.09	.26	.41	.01	.01	.27	.21	.07	.04	.44

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
61	10	.09	.56	.12	.28	.16	-.04	.01	.23	.15	.13	--	--
61	11	.08	.57	.15	.25	.16	-.02	-.03	.21	.12	-.00	.19	--
61	12	.08	.58	.14	.24	.13	-.00	-.01	.20	.10	.12	.03	.21
25	10	.10	.76	.10	.24	.03	.01	.03	.21	.24	.08	--	--
25	11	.09	.77	.11	.22	.03	.02	-.00	.19	.22	.00	.13	--
25	12	.10	.70	.10	.20	.01	.06	.02	.18	.19	.04	.03	.17
16	10	.07	.79	.07	.22	-.01	.03	.04	.17	.26	.06	--	--
16	11	.06	.80	.08	.21	-.01	.04	.02	.16	.25	.00	.10	--
16	12	.06	.82	.07	.19	-.03	.08	.04	.15	.21	.02	.03	.14
20	10	.06	.79	.05	.17	-.00	.03	.05	.18	.25	.04	--	--
20	11	.05	.80	.06	.16	.00	.04	.03	.17	.24	-.00	.08	--
20	12	.05	.82	.04	.14	-.02	.08	.06	.15	.20	-.00	.02	.13
2	10	.14	.16	.14	-.02	.59	.29	.14	.12	.14	-.02	--	--
2	11	.14	.15	.11	.00	.59	.26	.18	.13	.17	-.07	-.10	--
2	12	.14	.13	.13	.02	.61	.24	.16	.14	.18	-.05	-.08	.02
19	10	.13	.20	.11	-.01	.69	.19	.06	.18	.04	-.01	--	--
19	11	.13	.20	.12	-.01	.69	.19	.06	.18	.04	.02	-.00	--
19	12	.12	.18	.13	.00	.69	.16	.05	.18	.06	.05	.02	.06
42	10	.10	.14	.11	.06	.66	.13	.05	.14	.16	-.04	--	--
42	11	.10	.13	.10	.08	.66	.11	.08	.15	.18	.01	-.07	--
42	12	.10	.12	.11	.09	.66	.09	.06	.15	.19	-.03	.01	.08
34	10	.09	.21	.07	.04	.71	.13	.09	.22	.11	-.04	--	--
34	11	.09	.21	.07	.04	.71	.13	.09	.22	.11	.05	-.02	--
34	12	.08	.19	.08	.05	.72	.10	.08	.23	.12	.01	.04	.10
100	10	.07	.17	.06	.05	.65	.07	.13	.14	.11	.01	--	--
100	11	.07	.18	.08	.04	.64	.07	.12	.13	.10	.05	.06	--
100	12	.06	.16	.09	.05	.65	.03	.10	.14	.12	.09	.05	.10
60	10	.18	.58	.09	.06	.44	.13	.03	-.10	-.02	-.08	--	--
60	11	.18	.58	.10	.06	.44	.13	.04	.10	.02	.06	-.05	--
60	12	.17	.56	.12	.08	.48	.09	.01	.11	.00	.03	.03	-.07
39	10	.14	.81	.06	.05	.32	.18	.06	.07	.05	-.05	--	--
39	11	.14	.80	.05	.06	.32	.17	.08	.08	.06	-.03	-.08	--
39	12	.14	.78	.07	.08	.37	.13	.06	.09	.08	-.00	-.05	-.10

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
36	10	.11	.81	.04	.05	.30	.16	.09	.07	.06	-.02	--	--
36	11	.12	.80	.03	.06	.31	.15	.11	.07	.07	-.04	-.05	--
36	12	.11	.78	.05	.07	.35	.12	.09	.08	.08	.01	-.07	-.07
50	10	.11	.80	.00	.03	.27	.14	.09	.07	.07	-.03	--	--
50	11	.11	.80	-.01	.04	.28	.13	.11	.08	.08	-.03	.-06	--
50	12	.11	.78	.00	.05	.32	.11	.10	.08	.09	-.01	-.05	-.07
52	10	.05	.13	.11	.04	.13	.12	-.00	.72	.09	.09	--	--
52	11	.05	.12	.10	.06	.14	.09	.01	.72	.10	-.09	.03	--
52	12	.05	.13	.10	.05	.12	.10	.01	.72	.09	.02	-.09	.12
18	10	.12	.14	.05	.05	.21	.11	.00	.75	.10	-.04	--	--
18	11	.12	.14	.06	.04	.21	.11	-.00	.75	.10	.07	.01	--
18	12	.11	.14	.07	.05	.22	.08	-.02	.75	.11	.05	.06	.04
23	10	.09	.11	.09	.10	.13	.08	.12	.77	.07	.01	--	--
23	11	.08	.11	.08	.12	.13	.06	.14	.77	.09	-.02	.00	--
23	12	.08	.11	.08	.12	.13	.05	.13	.77	.09	.02	-.02	.07
65	10	.08	.07	.07	.05	.20	-.01	.10	.73	.10	-.01	--	--
65	11	.07	.07	.08	.04	.20	-.01	.09	.73	.09	.06	.06	--
65	12	.07	.08	.08	.04	.18	-.01	.09	.73	.09	.05	.07	.11
38	10	.10	.13	.09	.07	.27	.09	.05	.72	.10	.01	--	--
38	11	.09	.13	.09	.08	.28	.08	.06	.72	.11	.00	.02	--
38	12	.09	.12	.10	.09	.28	.05	.04	.72	.12	.06	-.01	.06
53	10	.22	.38	.05	.10	-.02	.04	.05	.62	.15	-.05	--	--
53	11	.21	.39	.06	.09	-.02	.05	.03	.61	.14	.10	.05	--
53	12	.20	.39	.07	.09	-.01	.03	.02	.61	.14	.08	.09	-.00
105	10	.16	.48	.12	.06	-.05	.00	.03	.47	.16	-.04	--	--
105	11	.16	.48	.13	.06	-.05	.01	.02	.47	.15	.05	.02	--
105	12	.15	.48	.13	.06	-.03	-.01	.01	.47	.15	.04	.05	-.02
3	10	.08	.14	.17	.08	.16	.35	.02	.04	.45	.04	--	--
3	11	.09	.13	.15	.10	.17	.32	.05	.04	.48	-.10	-.04	--
3	12	.09	.14	.14	.10	.15	.35	.06	.04	.45	-.07	-.09	.11
21	10	.04	.11	.19	.04	.21	.34	.06	.01	.40	.02	--	--
21	11	.04	.10	.15	.08	.22	.29	.10	.02	.43	-.12	-.09	--
21	12	.05	.11	.15	.07	.19	.34	.12	.01	.40	-.13	-.11	.11

APPENDIX K (continued)

Program Characteristics	Rotations	1	2	3	4	5	6	7	8	9	10	11	12
54	10	.11	.12	.05	.03	.00	.22	.11	.16	.55	-.17	--	--
54	11	.11	.11	.04	.05	-.00	.20	.14	.17	.57	.10	-.13	--
54	12	.11	.10	.06	.07	.04	.16	.11	.19	.60	-.03	.07	-.13
45	10	.08	.07	.05	.05	.00	.15	.16	.17	.58	-.18	--	--
45	11	.08	.06	.04	.07	.00	.13	.19	.18	.60	.23	-.11	--
45	12	.07	.05	.07	.09	.05	.06	.14	.19	.64	.01	.08	-.16
55	10	.07	.13	.18	.27	.02	.28	.13	.06	.44	.02	--	--
55	11	.07	.13	.18	.28	.03	.26	.13	.06	.44	-.00	.05	--
55	12	.07	.13	.18	.28	.03	.25	.12	.06	.44	.08	-.01	.03
5	10	.08	.08	.25	.12	.08	.16	.05	.21	.51	.06	--	--
5	11	.09	.07	.23	.14	.08	.13	.07	.22	.53	-.09	.01	--
5	12	.09	.08	.23	.13	.06	.14	.07	.21	.51	-.01	-.07	.13
64	10	.14	.02	.16	.12	.11	.06	.03	.12	.64	-.00	--	--
64	11	.13	.02	.16	.13	.11	.04	.04	.12	.64	.03	.02	--
64	12	.13	.03	.15	.12	.08	.08	.05	.11	.62	-.04	.05	.18
84	10	.20	.03	.10	.16	.07	.13	.09	.10	.64	-.14	--	--
84	11	.20	.03	.10	.16	.06	.11	.10	.11	.64	.14	-.06	--
84	12	.19	.02	.11	.17	.07	.09	.08	.11	.66	-.01	.12	-.02
14	10	.15	.22	.01	.06	.13	.03	.09	.03	.64	.17	--	--
14	11	.14	.23	.03	.04	.13	.02	.06	.02	.62	-.03	.23	--
14	12	.14	.23	.04	.04	.12	-.01	.04	.02	.63	.24	-.02	.14
8	10	.11	.24	.06	.05	.13	.11	.04	-.03	.61	.19	--	--
8	11	.11	.25	.07	.03	.14	.10	.00	-.04	.60	-.07	.21	--
8	12	.10	.25	.08	.03	.13	.08	-.01	-.05	.61	.22	-.07	.14
62	10	.15	.17	.07	.02	.17	.15	.12	.01	.50	.10	--	--
62	11	.14	.18	.08	.01	.18	.15	.11	.00	.50	-.02	.14	--
62	12	.14	.17	.09	.01	.17	.13	.10	.00	.50	.15	-.02	.10

APPENDIX L

t Statistics for Mean Factor Score Comparisons
Between Program Areas Based on Assumption of Equal Variances

		Occupational (N=83)	Student Services (N=88)	Developmental (N=5)	Community Instructional Services (N=21)
Factor 1	Advanced and Professional (N=65)	-0.723	0.037	0.070	-2.185
	Occupational (N=83)	--	0.824	-0.321	1.727
	Student Services (N=88)	--	--	-0.059	2.275
	Developmental (N=5)	--	--	--	0.724[a]
Factor 2	Advanced and Professional (N=65)	-0.242	4.600*	0.691	-0.960
	Occupational (N=83)	--	4.765[b],*	-0.711	0.772
	Student Services (N=88)	--	--	0.910	3.060[c],*
	Developmental (N=5)	--	--	--	0.893
Factor 3	Advanced and Professional (N=65)	1.339	-1.060	0.834	-0.998[d]
	Occupational (N=83)	--	-2.403	-0.285	1.951
	Student Services (N=88)	--	--	-1.036	0.436

APPENDIX L (continued)

		Occupational (N=83)	Student Services (N=88)	Developmental (N=5)	Community Instructional Services (N=21)
	Developmental (N=5)	--	--	--	1.044
	Advanced and Professional (N=65)	-0.493	-0.174	-1.813	-3.676[e,*]
	Occupational (N=83)	--	0.344	1.476	4.106[*]
Factor 4	Student Services (N=88)	--	--	1.656	2.628[f,*]
	Developmental (N=5)	--	--	--	0.642
	Advanced and Professional (N=65)	2.574[*]	0.072	1.263	-0.517
	Occupational (N=83)	--	-2.534[g,*]	-0.449	2.419
Factor 5	Student Services (N=88)	--	--	-1.133	0.535
	Developmental (N=5)	--	--	--	1.557
	Advanced and Professional (N=65)	0.884	0.025	-3.725[*]	-1.255
	Occupational (N=83)	--	-0.916	4.281[*]	1.928
Factor 6	Student Services (N=88)	--	--	3.737[*]	1.311
	Developmental (N=5)	--	--	--	-2.273
	Advanced and Professional (N=65)	-2.833[h,*]	-2.029	-1.081	-3.814[*]

APPENDIX L (continued)

		Occupational (N=83)	Student Services (N=88)	Developmental (N=5)	Community Instructional Services (N=21)
Factor 7	Occupational (N=83)	--	0.911	-0.096	1.469
	Student Services (N=88)	--	--	0.220	2.240
	Developmental (N=5)	--	--	--	.869
	Advanced and Professional (N=65)	0.636	-2.861*	0.701	1.108
Factor 8	Occupational (N=83)	--	-3.744*	-0.489	-0.707
	Student Services (N=88)	--	--	-1.587	-2.906*
	Developmental (N=5)	--	--	--	0.123
	Advanced and Professional (N=65)	1.645	0.642	-0.757	0.254
Factor 9	Occupational (N=83)	--	-1.176	1.478	0.866
	Student Services (N=88)	--	--	1.111	0.156
	Developmental (N=5)	--	--	--	-0.844

[a]This t is for unequal variances (F=4.01, significant at .05 level).
[b]This t is for unequal variances (F=1.94, significant at .05 level).
[c]This t is for unequal variances (F=2.79, significant at .05 level).
[d]This t is for unequal variances (F=2.07, significant at .05 level).
[e]This t is for unequal variances (F=2.26, significant at .05 level).
[f]This t is for unequal variances (F=1.99, significant at .05 level).
[g]This t is for unequal variances (F=1.53, significant at .05 level).
[h]This t is for unequal variances (F=1.92, significant at .05 level).
*Significant at .10 level with Bonferroni correction.

APPENDIX M

t Statistics for Mean Factor Score Comparisons
Between Administrative Areas Based on Assumption of Equal Variances

		Academic Affairs (N=210)	Student Affairs (N=88)	Community Instructional Services (N=21)	Business Affairs (N=29)	Presidents (N=13)
Factor 1	General Administration (N=89)	.117	.585	1.91	-1.170	1.125
	Academic Affairs (N=210)	--	.481	-2.137	-1.027	-1.343
	Student Affairs (N=88)	--	--	2.275	-0.666	-1.0777
	Community Instructional Services (N=21)	--	--	--	-2.850*	2.773
	Business Affairs (N=29)	--	--	--	--	.6421
Factor 2	General Administration (N=89)	1.281[a]	3.967*	1.461[b]	1.065	.980
	Academic Affairs (N=210)	--	5.662[c,*]	-1.215	-0.474	2.128[d]
	Student Affairs (N=88)	--	--	3.060[e,*]	4.103*	1.049
	Community Instructional Services (N=21)	--	--	--	-0.634	2.041[f]

APPENDIX M (continued)

		Academic Affairs (N=210)	Student Affairs (N=88)	Community Instructional Services (N=21)	Business Affairs (N=29)	Presidents (N=13)
	Business Affairs (N=29)	--	--	--	--	1.746
Factor 3	General Administration (N=89)	-1.268	-0.708	.696	-0.525[g]	.530
	Academic Affairs (N=210)	--	-1.834	-1.526	-0.262[h]	.009
	Student Affairs (N=88)	--	--	0.399	-0.662	-0.775
	Community Instructional Services (N=21)	--	--	--	-0.734	1.071[i]
	Business Affairs (N=29)	--	--	--	--	.225[j]
Factor 4	General Administration (N=89)	-0.255	.042	3.428[k,*]	.445	-1.294
	Academic Affairs (N=210)	--	0.256	-3.643[l,*]	-1.685	-1.469
	Student Affairs (N=88)	--	--	3.628[m,*]	1.660	1.519
	Community Instructional Services (N=21)	--	--	--	-2.145	1.601
	Business Affairs (N=29)	--	--	--	--	-0.196

APPENDIX M (continued)

		Academic Affairs (N=210)	Student Affairs (N=88)	Community Instructional Services (N=21)	Business Affairs (N=29)	Presidents (N=13)
Factor 5	General Administration (N=89)	-1.301	-0.701	.688	.623	.505
	Academic Affairs (N=210)	--	-1.575	-1.558	-1.043	-0.008
	Student Affairs (N=88)	--	--	0.611	.014	-0.608
	Community Instructional Services (N=21)	--	--	--	-0.442	1.001
	Business Affairs (N=29)	--	--	--	--	.528
Factor 6	General Administration (N=89)	.830	-1.890	1.960	1.830[n]	1.311
	Academic Affairs (N=210)	--	-0.296	-1.468	-0.243	2.463[o]
	Student Affairs (N=88)	--	--	1.159	.052[p]	-1.799
	Community Instructional Services (N=21)	--	--	--	- .845	2.648[q]
	Business Affairs (N=29)	--	--	--	--	1.702[r]
	General Administration (N=89)	-0.082	-0.030	1.872	.830	-2.325

APPENDIX M (continued)

		Academic Affairs (N=210)	Student Affairs (N=88)	Community Instructional Services (N=21)	Business Affairs (N=29)	Presidents (N=13)
Factor 7	Academic Affairs (N=210)	--	.558	-1.978	-1.521	-2.371
	Student Affairs (N=88)	--	--	2.085	1.753	2.645
	Community Instructional Services (N=21)	--	--	--	-0.449	-0.606
	Business Affairs (N=29)	--	--	--	--	-0.969
Factor 8	General Administration (N=89)	-1.367	-2.268	-1.428	.930	1.503
	Academic Affairs (N=210)	--	-4.731*	.726	-2.344	.951
	Student Affairs (N=88)	--	--	3.433*	-0.631	-2.621
	Community Instructional Services (N=21)	--	--	--	2.082	.319
	Business Affairs (N=29)	--	--	--	--	1.961
	General Administration (N=89)	1.542[s]	-1.184[t]	0.959[u]	2.455[v]	-1.196
	Academic Affairs (N=210)	--	-0.293	-0.316	-2.237	-0.385

APPENDIX M (continued)

		Academic Affairs (N=210)	Student Affairs (N=88)	Community Instructional Services (N=21)	Business Affairs (N=29)	Presidents (N=13)
Factor 9	Student Affairs (N=88)	--	--	0.144	1.953	.264
	Community Instructional Services (N=21)	--	--	--	1.186	-0.104
	Business Affairs (N=29)	--	--	--	--	.349

[a]This t is for unequal variances (F=1.81, significant at .05 level).
[b]This t is for unequal variances (F=2.45, significant at .05 level).
[c]This t is for unequal variances (F=1.70, significant at .05 level).
[d]This t is for unequal variances (F=2.96, significant at .05 level).
[e]This t is for unequal variances (F=4.87, significant at .05 level).
[f]This t is for unequal variances (F=2.79, significant at .05 level).
[g]This t is for unequal variances (F=2.10, significant at .05 level).
[h]This t is for unequal variances (F=2.05, significant at .05 level).
[i]This t is for unequal variances (F=3.17, significant at .05 level).
[j]This t is for unequal variances (F=4.12, significant at .05 level).
[k]This t is for unequal variances (F=1.96, significant at .05 level).
[l]This t is for unequal variances (F=1.98, significant at .05 level).
[m]This t is for unequal variances (F=1.99, significant at .05 level).
[n]This t is for unequal variances (F=2.18, significant at .05 level).
[o]This t is for unequal variances (F=2.96, significant at .05 level).
[p]This t is for unequal variances (F=1.90, significant at .05 level).
[q]This t is for unequal variances (F=3.66, significant at .05 level).
[r]This t is for unequal variances (F=4.64, significant at .05 level).
[s]This t is for unequal variances (F=1.81, significant at .05 level).
[t]This t is for unequal variances (F=1.68, significant at .05 level).
[u]This t is for unequal variances (F=2.03, significant at .05 level).
[v]This t is for unequal variances (F=3.28, significant at .05 level).
*Significant at .10 level.

REFERENCES

Alkin, M.C. Evaluation theory development. Evaluation Comment, 1969, 2(2), 2-7.

Alkin, M.C., & Fitz-Gibbon, C.T. Methods and theories of evaluating programs. Journal of Research and Development in Education, 1975, 8(3), 2-15.

Anderson, S.B., Ball, S., & Murphy, R.T. Encyclopedia of educational evaluation. San Francisco: Jossey Bass, 1975.

Astin, A.W. Undergraduate institutions and the production of scientists. Science, 1963, 41, 334-338.

Astin, A.W. Who goes where to college? Chicago: Science Research Associates, 1965.

Astin, A.W. Predicting academic performance in college. New York: Free Press, 1971.

Astin, A.W., & Henson, J.W. New measures of college selectivity. Research in Higher Education, 1977, 6, 1-8.

Astin, A.W., & Solmon, L.C. Measuring academic quality: An interim report. Change, November 1979, pp. 48-51.

Astin, A.W., & Solmon, L.C. Are reputational ratings needed to measure quality? Change, October 1981, pp. 14-19.

Balderston, F.E. Thinking about the outputs of higher education. New York: Ford Foundation, 1970. (ERIC Document Reproduction Service No. ED 078 770)

Balderston, F.E. Managing today's university. San Francisco: Jossey Bass, 1974.

Banghart, F.W., Kraprayoon, P., & Clewell, B.C. A study of educational quality: Development of indices and evaluation model (Final Report, STAR Contract No. 77-2012). Tallahassee: Office of the Governor, State of Florida, 1978.

Bess, J.L., & Hayes, C. Benefits and beneficiaries of innovations: A research model. In C.T. Stewart (Ed.), Institutional research and institutional policy formulation: 11th annual forum of the Association for Institutional Research 1971. Tallahassee, Florida: Association for Institutional Research, 1971, 43-47.

Biggs, D.A., Brown, J., & Kingston, G. Citizens' educational values and their satisfaction with a state university. Research in Higher Education, 1977, 6, 157-167.

Blackburn, P.T., & Lingenfelter, P.E. Assessing quality in doctoral programs: Criteria and correlates of excellence. Ann Arbor: Center for the Study of Higher Education, University of Michigan, 1973. (ERIC Document Reproduction Service N. ED 078 728)

Bloom, B.S., Hastings, J.T., & Madaus, G.F. Handbook on formative and summative evaluation of student learning. New York: McGraw-Hill, 1971.

Bowen, H.R. The tyranny of numbers. Phi Delta Kappan, 1963, 44, 427.

Bowen, H.R. (Ed.). Evaluating institutions for accountability. New Directions for Institutional Research (No. 1). San Francisco: Jossey Bass, 1974.

Bowker, A.H. Quality and quantity in higher education. Journal of the American Statistical Association, 1964, 10(3), 1-15.

Boyer, E.L. Academic excellence. Improving College and University Teaching, 1964, 12, 164.

Brown, D.G. The mobile professors. Washington, D.C.: American Council on Education, 1967.

Burt, C.L. The appropriate use of factor analysis and analysis of variance. In R.B. Cattell (Ed.), Handbook of multivariate experimental psychology. Chicago: Rand McNally & Co., 1966.

Carpenter, R.L., & Carpenter, P.A. The doctorate in librarianship and an assessment of graduate library education. Journal of Education for Librarianship, 1970, 11(2), 3-45.

Cartter, A.M. An assessment of quality in graduate education. Washington, D.C.: American Council on Education, 1966.

Cartter, A.M., & Solmon, L.C. The Cartter report on the leading schools of education, law, and business. Change, February 1977, pp. 44-48.

Cattell, R.B. The dimensions of culture patterns by factorization of national characters. Journal of Abnormal and Social Psychology, 1949, 44, 443-469.

Cattell, R.B. Personality: A systematic theoretical and factual study. New York: McGraw-Hill, 1950.

Cattell, R.B. The meaning and strategic use of factor analysis. In R.B. Cattell (Ed.), Handbook of multivariate experimental psychology. Chicago: Rand McNally & Co., 1966.

Cattell, R.B. The structure of personality in its environment: Volume 1, personality and learning theory. New York: Springer Publishing Co., 1979.

Cattell, R.B., Breul, H., & Hartman, H.P. An attempt at more refined definitions of the cultural dimensions of syntality in modern nations. American Sociological Review, 1951, 17, 408-421.

Clark, M.J., Hartnett, R.T., & Baird, L.L. Assessing dimensions of quality in doctoral education: A technical report of a national study in three fields. Princeton, New Jersey: Educational Testing Service, 1976. (ERIC Document Reproduction Service No. ED 173 144)

Cole, J.R., & Lipton, J.A. The reputation of American medical schools. Social Forces, 1977, 55, 662-684.

Cox, W.M., & Catt, V. Productivity ratings of graduate programs in psychology based on publication in the journals of the American Psychological Association. American Psychologist, 1977, 32, 793-813.

Craven, E.C. Information decision systems in higher education: A conceptual framework. Journal of Higher Education, 1975, 46, 125-139.

Craven, E.D. (Ed.). Academic program evaluation. New Directions for Institutional Research (No. 27). San Francisco: Jossey Bass, 1980.

Cronbach, L.J. Educational psychology (2nd ed.). New York: Harcourt, Brace, & World, 1963.

Division of Community Colleges. Community college management information systems procedures manual. Tallahassee, Florida: Division of Community Colleges, 1980.

Division of Community Colleges. Directory of Florida community colleges. Tallahassee, Florida: State Department of Education, 1981a.

Division of Community Colleges. Report for Florida community colleges 1979-80. Tallahassee, Florida: State Department of Education, 1981b.

Division of Community Colleges. Quality indicators (Memorandum No. 82-90). Tallahassee, Florida: State Department of Education, 1982.

Dixon, W.J., & Brown, M.B. BMDP biomedical computer programs: P-series 1979. Berkeley, California: University of California Press, 1979.

Dolan, W.P. The ranking game: The power of the academic elite. Lincoln, Nebrasks: University of Nebraska Press, 1976. (ERIC Document Reproduction Service No. ED 129 131).

Doll, R.D. Curriculum improvement: Decision making and process (2nd ed.). Boston: Allyn & Bacon, 1970.

Dressel, P., & Simon, L.K. Allocating resources among departments. New Directions for Institutional Research (No. 11). San Francisco: Jossey Bass, 1976.

Drew, D.E. Science development: An evaluation study. Washington, D.C.: National Academy of Sciences, 1975. (ERIC Document Reproduction Service No. ED 108 967)

Dube, W.F. Undergraduate origins of U.S. medical students. Journal of Medical Education, 1974, 49, 1005-1010.

Elton, C.F., & Rose, H.A. What are ratings rating? American Psychologist, 1972, 27, 197-201.

Finn, C.E. The future of education's liberal consensus. Change, September 1980, pp. 25-30.

Florida Community/Junior College Inter-Institutional Research Council. A proposal for identifying program characteristics useful in program quality-evaluation decision making in Florida's community college system. Gainesville: Florida Community/Junior College Inter-Institutional Research Council, 1981.

Fotheringham, D.J. Quality indicators in undergraduate education as viewed by selected respondents in selected colleges and universities (Doctoral dissertation, State University of New York at Albany, 1978). Dissertation Abstracts International, 1978, 39, 696A. (University Microfilms No. 78-14334, 129)

Fox, D.J. The research process in education. New York: Holt, Rinehart, & Winston, Inc., 1969.

Gardner, D.E. Five evaluation frameworks. Journal of Higher Education. 1977, 48, 571-593.

Gourman, J. The Gourman report: Ratings of American colleges. Phoenix, Arizona: Continuing Research Institute, 1967.

Gourman, J. A rating of undergraduate programs in American and international universities. Los Angeles: National Education Standards, 1977.

Gregg, R.T., & Sims, P.D. Quality of facilities and programs of graduate departments of educational administration. Educational Administration Quarterly, 1972, 8(3), 67-92.

Guba, E.G. Problems in utilizing the results of evaluation. Journal of Research and Development in Education, 1975, 8(3), 42-54.

Guertin, A.D. Distortion of factor loadings as a function of the number of factors rotated under varying levels of common variance and error (Doctoral dissertation, University of Florida, 1977). Dissertation Abstracts International, 1977, 38, 3365B. (University Microfilms No. 77-29248, 132)

Guertin, W.H., & Bailey, J.P. Introduction to modern factor analysis. Ann Arbor, Michigan: Edwards Brothers, 1970.

Hagstrom, W.O. Inputs, outputs, and the prestige of university science departments. Sociology of Education, 1971, 44, 375-397.

Harman, H.H. Modern factor analysis (3rd ed. rev.). Chicago: University of Chicago Press, 1976.

Hawes, G.R. Hawes comprehensive guide to colleges. New York: New American Library, 1978.

Hughes, R.M. A study of the graduate schools in America. Oxford, Ohio: Miami University Press, 1925.

Hughes, R.M. Report of the committee on graduate instruction. Educational Record, 1934, 15, 192-234.

Jennrich, R.I., & Sampson, P.F. Rotation for simple loadings. Psychometrika, 1966, 31, 313-323.

Johnson, R.R. Leadership among American colleges. Change, February 1978, pp. 50-51.

Jordan, R.T. Library characteristics ranking high in academic excellence. College and Research Libraries, 1963, 24, 369-376.

Keller, J. Higher education objectives: Measures of performance and effectiveness. In J. Minter, & B. Lawrence (Eds.), Management Information systems: Their development and use in the administration of higher education. Boulder, Colorado: Western Interstate Commission for Higher Education, 1969.

Keniston, H. Graduate study and research in the arts and sciences at the University of Pennsylvania. Philadelphia: University of Pennsylvania Press, 1959.

King, M.C. Quality assurance at B.C.C. Communique (Brevard Community College, Cocoa, Florida), August 21, 1981, p. 1.

Krause, E.D., & Krause, L. The colleges that produce our best scientists: A study of the academic training grounds of a large group of distinguished American scientists. Science Education, 1970, 54(2), 133-140.

Lawrence, B., Weathersby, G., & Patterson, V.W. (Eds.). Outputs of higher education: Their identification, measurement, and evaluation. Boulder, Colorado: Western Interstate Commission for Higher Education, 1970.

Lawrence, J.D., & Green, K.C. A question of quality: The higher education ratings game. AAHE-ERIC Higher Education Research Report No. 5. Washington, D.C.: American Association for Higher Education, 1980. (ERIC Document Reproduction Service No. ED 192 667)

Lazarsfield, P.F., & Thielens, Jr., W. The academic mind. Glencoe, Illinois: The Free Press, 1958.

Legislators stress quality improvement. Southern Regional Education Board Regional Action, October 1980, pp. 1-3, 5-7.

Lewis, L.S. On subjective and objective rankings of sociology departments. American Sociologist, 1968, 3, 129-131.

Margulies, R.Z., & Blau, P. America's leading professional schools. Change, November 1973, pp. 21-27.

Meder, A.E., Jr. How can an institution safeguard the quality of its educative processes while increasing its enrollments? Current Issues in Higher Education, 1955, 3, 188-192.

Morgan, D.R., Kearney, R.C., & Regens, J.L. Assessing quality among graduate institutions of higher education in the United States. Social Science Quarterly, 1976, 57, 671-679.

Mulaik, S.A. The foundation of factor analysis. New York: McGraw-Hill, 1972.

Munson, C.E., & Nelson, F. Measuring the quality of professional schools. UCLA Educator, 1977, 19, 41-52.

Myers, J.L. Fundamentals of experimental design (3rd ed.). Boston: Allyn and Bacon, Inc., 1979.

Nichols, R.C. College preferences of eleventh grade students. National Merit Scholarship Corporation Research Reports, 1966, 2(9).

Ostar, A.W. Quality: How is it really measured? College and University Business, 1973, 54(5), 24-28.

Ousiew, L., & Castetter, W.B. Budgeting for better schools. Englewood Cliffs, New Jersey: Prentice-Hall, 1960.

Perry, R.R., & Lind, D.A. Criteria warranted for evaluation of academic programs at the University of Toledo. In R.H. Fenske (Ed.), Conflicting pressures in postsecondary education: 16th annual forum of the Association for Institutional Research, 1976. Tallahassee, Florida: Association for Institutional Research, 1977, 19-25.

Petrowski, W.R., Brown, E.L., & Duffy, J.A. National universities and the ACE ratings. Journal of Higher Education, 1973, 44, 495-513.

Pike. W.L. An analysis of the relationship of current expenditures, enrollment, and expenditure per student to certain variables associated with educational quality for Texas public junior colleges, 1959-1962 (Doctoral dissertation, University of Texas, 1963). Dissertation Abstracts International, 1963, 24, 2761A-2762A. (University Microfilms No. 64-104, 239)

Pirsig, R.M. Zen and the art of motorcycle maintenance. New York: William Morrow, 1974.

Popham, J.W. Education evaluation. Englewood Cliffs, New Jersey: Prentice-Hall, 1975.

Pyatte, J.A. Functions of program evaluation and evaluation models in education. High School Journal, 1970, 53, 385-401.

Richards, J.M., Jr., Holland, J.L., & Lutz, S.W. The assessment of student accomplishments in college. American College Testing Program Research Reports, 1966, No. 11. (ERIC Document Reproduction Service No. ED 022 417)

Rock, D.A., Centra, J.A., & Lynn, R.L. The identification and evaluation of college effects on student achievement. Princeton, New Jersey: Educational Testing Service, 1969. (ERIC Document Reproduction Service No. ED 037 182)

Roose, K.D., & Andersen, C.J. A rating of graduate programs. Washington, D.C.: American Council on Education, 1970.

SAS Institute Inc. SAS user's guide 1979 edition. Raleigh, North Carolina: SAS Institute Inc., 1979.

Scriven, M. Pros and cons about goal-free evaluation. Evaluation Comment, 1972, 3(3), 1-4.

Scriven, M. Goal-free evaluation. In E.R. Hoose (Ed.), School evaluation: The politics and process. Berkeley, California: McCutchan, 1973.

Smart, J.C. Institutional goal and congruence: A study of student, faculty, and administrator preferences. Research in Higher Education, 1975, 3, 285-297.

Solmon, L.C. The definition of college quality and its impact on earnings. Explorations in Economic Research, 1975, 2, 537-587.

Solmon, L.C., & Astin, A.W. A new study of excellence in undergraduate education. Part one: Departments without distinguished graduate programs. Change, September 1981, pp. 22-29.

Somit, A. & Tanenhaus, J. American political science. New York: Atherton Press, 1964.

State Board of Education. Minutes, January 20, 1981, pp. 8-9.

Steuart, T.A. & Rathburn, C.B. III. Quality: A decision-making approach. Gainesville: Florida Community/Junior College Inter-Institutional Research Council, 1982.

Stufflebeam, D.L. Toward a science of educational evaluation. Educational Technology, 1968, 8(6), 5-12.

Stufflebeam, D.L. Evaluation as enlightenment for decision making. In W.H. Beatty (Ed.), Improving educational assessment and an inventory of affective behavior. Washington, D.C.: Association for Supervision and Curriculum Development, 1969.

Stufflebeam, D.L., Foley, W.J., Gephart, W.J., Guba, E.G., Hammond, R.L., Merriman, H.O., & Provus, M.M. Educational evaluation and decision making. Itasca, Illinois: F.E. Peacock, 1971.

Tidball, M.E., & Kistiakowski, V. Baccalaureate origins of American scientists and scholars. Science, 1976, 193, 646-652.

Turnball, W.W. Dimensions of quality in higher education. In W.T. Furniss (Ed.), Higher education for everybody? Issues and implications. Washington, D.C.: American Council on Education, 1971.

Tyler, R.W. Basic principles of curriculum and instruction: Syllabus for education 360. Chicago: The University of Chicago Press, 1950.

Walters, J.D. Indicators of quality obtained from an analysis of southern accreditation team visits to selected public junior colleges (Doctoral dissertation, University of Florida, 1970). Dissertation Abstracts International, 1970, 32, 1890A-1890B. (University Microfilms No. 71-24, 984, 161)

Webster, D.S. Advantages and disadvantages of methods of assessing quality. Change, October 1981, pp. 20-24.

Wispe, L.G. The bigger the better: Productivity, size, and turnover in a sample of psychology departments. American Psychologist, 1969, 24, 662-668.

Wolf, R.M. Evaluation in education: Foundations of competency assessment and program review. New York: Praeger, 1979.

Worthen, R.B., & Sanders, J.R. Educational evaluation: Theory and practice. Worthington, Ohio: Jones, 1973.

BIOGRAPHICAL SKETCH

Thomas Albert Steuart was born in Tampa, Florida, in 1938. He lived in Tampa until his graduation from Hillsborough High School in 1956 when he moved to Gainesville, Florida to attend the University of Florida. He received his B.S. in mathematics fron the University of Florida in 1963 and his M.Ed. in educational psychology in 1970. During the interim, he received a B.D. in theology from Duke University. He was married in 1960 and fathered a daughter and a son. He spent two years in the Methodist ministry and in 1972 began teaching psychology at Northern Virginia Community College in Alexandria. He moved to Henderson, Kentucky, and taught at Henderson Community College until 1976 when he assumed a position as substance abuse counselor at Southwestern Indiana Mental Health Center in Evansville. After three years and a divorce, he returned to the University of Florida to pursue his Ph.D. in higher education administration with a career goal in community college institutional research. While working on his doctorate, he was a graduate research associate with the Florida Community/Junior College Inter-Institutional Research Council. He is presently employed part-time at the College of Nursing at the University of Florida as a biostatistician while seeking a position in a community college.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

John M. Nickens
Professor of Educational Administration
and Supervision

I certify that I have read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

James L. Wattenbarger
Professor of Educational Administration
and Supervision

I certify that I have read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Robert S. Soar
Professor of Foundations of Education

This dissertation was submitted to the Graduate Faculty of the Department of Educational Administration and Supervision in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

April, 1983

Dean for Graduate Studies and Research

UNIVERSITY OF FLORIDA
3 1262 08285 246 7